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FOCAL INFECTION AND ITS RELATION TO THE DISEASES OF THE EYE*

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It is my desire in this paper to take up rather briefly a discussion of focal infection as an etiological factor in the production of inflammation of the structures of the eye. Focal infection may be defined as an acute or chronic localized area of inflamed tissue, harboring single or mixed strains of disease-producing organisms, the toxins and metabolic products of which are absorbed by lymphatic or capillary circulation and the clinical manifestations usually observed in the more delicate and highly specialized structures, often in distant and remote parts of the body.

The structures of the eye may become affected by toxins which have been absorbed from an area of focal infection. There may be all of the cardinal signs of a severe inflammation of any one or more of the various structures of the eye without the presence of any organisms in these structures. Such cases are considered toxic inflammations because they are not so acute in their onset and do not have an extensive exudation. They are not prone to involve the other structures of the eye and are often associated with the various forms of neuritis of the peripheral nerve endings in the eye. Toxic inflammations of the eye are observed with chronic infection in the pneumatic sinuses of the nose, the most important of which, with regard to eye conditions, are the posterior ethmoidal cells, sphenoidan, and frontal and maxillary sinuses. These toxic inflammations clear up very readily after removal of the foci of infection from which the toxic material is absorbed.

There are a number of pathological conditions of the eye which are more difficult to classify as toxic inflammation, or as infections, since it is more than probable that these lesions are caused by the direct effect of the bacteria. They are associated with focal infections and present a more severe chain of symptoms than the toxic inflammations. They are more often seen with general diseases such as rheumatism, syphilis and tuberculosis. It is my desire to speak of these particular lesions of the eye, as metastatic infections of the eye, since the organisms were derived from some other part of the body and no doubt carried to the eye in the blood stream. It is not, however, possible to prove the above assertions; but sufficient clinical evidence has been gathered by the various observers to warrant a classification of toxic inflammation and metastatic infections, and consider

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them as two separate and distinct pathological entities, which may be derived from focal infection. Because of the histological variations in the eye structures, some are more often involved by toxines, and others by bacteria. The cornea and sclera seem more resistant to the bacterial toxins of focal infection and this may be explained by the fact that these structures are of connective tissue origin.

The iris and ciliary bodies and choroid are very vascular structures and may easily become infected from the blood stream. They are not resistant to toxins and are very often inflamed by the toxins from a foci of infection.

The retina is of nervous tissue origin and it is most susceptible to toxic conditions; hence it is frequently absorbed by toxin absorption. It is well protected by the coverings of the eye-ball, but because of its extensive blood supply, it is very favorably exposed to metastatic infection. The conjunctiva may be affected by either toxins or bacteria. The conjunctiva is the glistening mucous membrane lining the lids of the eye and is reflected over the globe. It may be divided into: Palperba, that portion covering the lids; and bulbar, that portion attacheh to the globe. It is well supplied with blood vessels and receives its enervation from the ocular division of the fifth nerve. The importance of this will be seen in attempting to explain lesions of the conjunctiva and the cornea, caused by focal infections of the sphenoid, which is in close anatomical relationship with the gasserian ganglion. Acute or chronic conjunctivitis occurs very frequently with focal infection of the frontal or sphenoidal sinuses. It is rare to find a case of conjunctivitis derived from infected teeth or tonsils. Conjunctivitis associated with frontal sinusitis is subacute or chronic, is never severe and presents no marked clinical manifestations. When focal infection is located in the frontal sinus, because of its anatomical relationship, existing between the frontal sinus and the orbit, there is pain and tenderness over the inner margin of the orbit and slight tenderness in the eye-ball. Headaches may or may not accompany this conditoin. Sometimes headaches are not noticed nor the eye symptoms complained of until the sinus has become closed off. The inflammation may extend to the margin of the lids, less often the cornea is involved. After the focus of infection has been successfully treated, the conjunctivitis and other eye symptoms clear up readily without any further treatment, though it has a tendency to recur with acute colds and coryzas. It has been found that relief from symptoms is promptly followed by cocainization of the spheno-palatine ganglia. It is important to realize that conjunctivitis may be caused by foci of infection and when treating a case that apparently does not respond and for which there seems no definite cause, it is well to make a very complete nasal examination in an effort to find the foci of infection.

Scleritis and Episcleritis. Scleritis and episcleritis may be associated with a conjunctivitis or it may occur alone. Most of the lesions of the sclera are not traceable to sinus infection. Acute scleritis observed as a circumscribed swelling of pinkish color under the conjunctiva, forming a circular lesion tending to spread around the eye-ball, occasionally accompanies rheumatism; which in the light of our present knowledge, we know to be a disease of focal infection origin. In all probability this type of scleritis is a true metastatic infection by streptococcus, which has been carried to the sclera by some foci of infection. Scleritis and episcleritis of rheumatic origin, perhaps are more often derived from focal infection of the teeth and tonsils than from various sinuses of the nose, because the streptococcus is found more often a chronic invader of the teeth and tonsils. This form of scleritis and episcleritis does not respond readily to treatment. The sclera may be perforated and infection of the contents of the orbit with complete loss of the eye result. It is this fact which leads one to believe that scleritis and episcleritis of rheumatic origin is a direct infection of the sclera rather than a toxic inflammation. The scleritis is usually very chronic and acute exacerbations occur when the rheumatic symptoms are most severe.

Herpes of the Cornea. Herpes of the cornea may be understood to mean a toxic inflammation of the peripheral nerve endings of the ophthalmic division

of the fifth nerve and also involving the cells of the gasserian ganglia. The lesion on the cornea is first seen as a small single or a group of vesicles on the cornea which later break down, forming a small ulcer. They are more often observed accompanying an acute, general infection with a severe systemic intoxication, of which pneumonia is a classical example. This same lesion of the cornea has been observed with a chronic infected post-ethmoidal sphenoiditis with neuritis of the fifth nerve. The involvement of the nerve usually occurs, however, without the herpes on the cornea. A neuritis of the fifth nerve is more often involved in focal infection of the ethmoidal and sphenoidal sinuses because of the intimate anatomical relationship of the ganglia to the sphenoidal sinus.

Keratitis Neuroparalytica. Keratitis neuroparalytica is an inflammation of the cornea which follows a paresis of the sensory endings of the fifth nerve in the cornea. The cornea becomes exposed to the action of extraneous substances because of the loss of sensation. Here again it will be found that chronic infections of the sphenoid and post-ethmoidal cells, with a consequent involve- of gasserian ganglia, is the real cause of the conditions found in the eye. In all cases of neuritis or symptoms of neuritis of the fifth nerve, an examination of the post-ethmoidal cells and sphenoidal sinus is important. Some of the best observers are now recognizing that operative procedure on the sphenoid with treatment of the ganglia, is more rational than the usual cranial operations and destruction of the ganglia, since the destruction of the ganglia relieves only the symptoms and not the cause of neuritis.

Corneal Ulcers. Corneal ulcers may follow infection of simple herpes previously referred to as a neuritis of focal infection origin, though in most instances ulcers of the cornea are caused by direct infection of the corneal tissue following wounds and abrasions. The cornea is of connective tissue origin, and therefore very resistant to toxins; but, as previously stated, the nerves in the cornea occasionally are affected by toxins derived from an area of infection. Ulcers of the cornea which have as their direct cause some area of focal infection are, no doubt, true metastatic infections and they do not differ from the usual corneal ulcer.

Iritis. Acute, subacute or chronic, either unilateral or bilateral. Iritis occasionally can be traced to a chronic infection of sinuses of the nose, infected tonsils or the gums. It is very often of streptococcal origin, in which case it should be considered a metastatic infection of the iris. This type of iritis is seen in rheumatism, endocarditis, septicemias, and all of the various infections caused by the streptococcus organism. The streptococcus viridans is the strain usually found, though the streptococcus hemolytic and nonhemolytic have occasionally been found in the focal infected area. The ciliary body and choroid may also become involved with the iris in this process and is particularly true of the metastatic infections by pyogenic bacteria. Iritis of rheumatic origin has long been known and described. There is nothing about it particularly new except the fact that the underlying cause of the iritis is also the cause of the rheumatism. In other words, they are both derived from focal infection. The toxic form of iritis has a chronic onset, a less severe course, and is manifested by congestion and inflammation, without extensive exudation. The focal infection, causing this form of iritis, may be located in any of the sinuses, teeth, tonsils, etc. In the last year many cases have been reported with post-ethmoiditis and sphenoiditis.

There are numerous other inflammatory conditions of the iris, retina and choroid which may be caused by focal infection and the cases reported at the present time demonstrate clearly that focal infection plays a most important part in lesions of the eye which previously were considered of unknown etiology. Some of the more frequent conditions seen in the eye associated with focal infection of the sinuses are retinitis, choroiditis, neuritis, optic neuritis descendens, blepharitis, tic douloureux, glaucoma, and some of the amblyopia. It

is not within the limits of this paper to consider in detail the pathological changes of each structure of the eye brought about by focal infection. Though I do wish to emphasize the fact that the eye, being of delicate and highly specialized tissues and because of its susceptibility to toxins and organism of focal infection, may present the earliest and most convincing evidence of hidden focal infection.

The data for this paper was gathered from the works of the following authorities: Deaver's Anatomy, Howell's Physiology, Schaffer's Histology, Fuch's Ophthalmology, May's Ophthalmology, Week's Ophthalmology, Discussion of Sluder on Headaches and Diseases of the Sinuses, Leob's Diseases of the Nose, Dr. Dickerson of the New York Eye and Ear Infirmary, Prof. Burtsell of the New York Infirmary, Dr. H. W. Wooten, Manhattan Eye and Ear Infirmary, and a number of cases that have come under my own observation.

METASTATIC INFECTION*

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Metastatic Infections as manifested in different forms of rheumatism, arterial sclerosis, ovarian cysts, thyroid glands, nephritis and various other secretory organisms that control the general metabolism of human economy.

The conditions enumerated above are not diseases but symptoms of a focal infection located elsewhere in the body and transferred to the point of demonstration through the blood or lymphatic system. The focal infection may be small and easily overlooked by the diagnostician, therefore, it takes close observation, blood examinations and x-rays with all the other available means at our command to locate the foci. The most prevalent foci are found in the teeth, sinuses of the nose, tonsils, urinary organs, gall-bladder, appendix, abscesses in various locations, puncture wounds, and syphilis, if we do not count it a focal infection when it is contracted before it becomes a blood condition.

The teeth and mouth may not show macroscopically any disease, whatever, and the only way to eliminate the mouth from being the focal infection is by the x-ray. Do not allow dentists to treat abscessed teeth with the known remedies of today; pull them, curette and drain the same as in osteomyelitis.

Tonsils may be overlooked by the general practitioner who is not accustomed to meeting with these buried tonsils, or one that gives a history of not having had a sore throat. Tonsils after having been affected and which do not return to a normal condition should be removed regardless of age and I do not believe there are many normal tonsils at the age of puberty so if they were removed early before the rupture of the ovum, the infection would not be transferred to the blood clot in the ovum nest.

The genito-urinary tract also may give trouble in regard to diagnosis, but the history and the microscope with physical and bi-manual examinations will generally give you a clear sight in regard to the organs.

The appendix as a rule, if giving any disturbance or acting as a focal infection, will give a history of indigestion or paroxysmal pains at intervals and tenderness upon pressure over the site of the organ.

Abscesses located in other parts of the body and excluding the other possibilities, can generally be diagnosed by the blood count.

Puncture wounds can be seen readily and diagnosed.

Syphilis in the chancre stage will give no trouble, but primary and secondary history may be absolutely negative and a Wassermann of the blood may also be negative. So do not exclude syphilis as being an impossibility until you have had a negative cell count and a Wassermann of the spinal fluid.

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The symptoms as enumerated above we call rheumatism, neuritis, arterial sclerosis, etc. The treatment is to locate the foci and remove it or drain it, allowing the patient to get well if this condition has not existed over a period of time long enough to destroy the parenchyma of the organ which has been infected. By the word parenchyma here, I mean the part of the organ that produces the symptom about which the patient consults the physician.

Rheumatism is a symptom that manifests itself in the organism in the form of pain.

Neuritis is of the same nature, causes pain and sometimes atrophy of the parts to which it supplies.

Arteritis manifests itself by causing pain, possibly swelling and fever.

Arterial sclerosis, and I am positive that here some of my colleagues will take issue with me, but I am of the firm opinion that arterial sclerosis is always due to infection whether it be that form called alcoholic or a form that is due to syphilis, or that form that is due to senility.

It is a trite saying that a man is no older than his arteries. To enter upon the discussion of the changes, and indicate the changes that take place in arterial sclerosis, it would be impossible to bring out in this paper, but enough to say that the arterial sclerosis is a conditon of a thickening of the walls of the vessels which you find in gummatic conditions following syphilis and in a lesser degree when due to other infections, but the principles are exactly the same; that the inflammtion that was produced upon the walls of the vessel by the infection, or toxins, was coffer-dammed as all infections whenever in the body, which resulted in a chronic thickening of the walls of the blood vessels, the coffer-dam causing arterial sclerosis which gives symptoms to which it will be necessary to explain to this society.

Goitre, or inflammation of the thyroid gland, to my mind are synonymous terms of the thyroid gland infection and are due to infections that are most generally found in the tonsil. This infection causes at first a congestion of blood into the organ and surrounding it and causes it to manufacture an overplus of the thyroid extract or internal secretion which results in the symptoms to the patient that we all know. The inflammation still exists in the thyroid glands and the process that goes on is the same as it is in the ovary, kidney, or pancreas or the other internal and external secretory glands until finally it destroys the parenchyma of the gland and we have what is known as a colloid degeneration of the gland, or tumor, changing the patient's symptoms from hyper- to a hypo-thyroidism.

The ovarian cyst is due to the infection in the blood stream and infects the blood clot that is formed in the corpus luteum and does not allow it to go through the stage of resolution normally and results in a cyst which continues to develop and pressure causes absorption of the organ and its parenchyma until finally we have left a shell or capsule filled with a watery solution.

Nephritis. The process of degeneration in the kidney is almost analogous to that of the thyroid gland. The pancreas and the other internal secretory glands (with the exception possibly of the pituitary body) undergo like degenerations with the ultimate results, the picture of which you all have seen ofttimes to your sorrow. This may not be a metastatic infection through blood or lymph, but direct from the bladder.

It would probably be a little far fetched at this period to make a declaration that I am about to make; that when we become more proficient in diagnosis of focal infections and the public realizes the many ailments and conditions that result therefrom, and their treatment instigated early, man's longevity will be increased many fold. As I have said heretofore, a man is no older than his arteries and what we have been terming arterial sclerosis, if my statement is right, when we eliminate focal infections, the causes of arterial sclerosis, the causes of the disturbances of the internal secretaion, man's pain and senility will be practically eliminated, but there is many a step and a great deal of research in the future to bring about these results. When we have obtained the active principles

of the internal secretions of the different glands and can reproduce them in the chemical laboratory, or extract them from the animal, it will be possible after having eliminated the foci of infection, to administer the proper dosage of the active principle of the internal secretion that it is sufficient to bring about, or support the normal physical condition of our bodies to perpetuate life to any age, far beyond that of three score years and ten. We will also be able to take a new born infant and produce the size, habits and mentality to a uniform standard which may be set as being a perfect man or woman by the administration of the internal secretions, or the control of internal secretions, which are closely allied to each other. For example, ovarian and thyroid.

So the doctor of the coming age will not be the man of today who administers drugs to cure disease, but will be a scientific man to prevent disease and he will administer vaccines, serums and the excretions (or the chemical analogues thereto) from the internal secretions that now are necessities to a complete metabolism of a healthy body.

The druggist will not compound prescriptions but he will be a chemist, and a bacteriologist capable of making vaccines, serums, extracting from the glandular structure of animals, or producing that likeness in an extract, or chemical combination within his laboratory as per prescription of the medical man to his patient.

In summing up these few remarks to the present physician and surgeon of today, my advice is to make careful diagnosis and acute observation with the one idea in view that focal infection is the downfall and cause of the suffering of the human anatomy and it is his duty when consulted to use all the known elements at his disposal to locate the foci and remove the same or have it removed at the earliest possible moment and he will accomplish for his patients the enjoyment of good health and a reputation for himself and his profession and will redee ı the wonderful science back to that pinnacle that it rightly deserves—to the elimination of the osteopath, chiropractor and Christian Scientist.

VARICOCELE.

W. A. Angwin, Philadelphia (*Journal A. M. A.*, March 29, 1919), says that varicocele is a frequent cause of disability in the navy, on account of the complaints of reflex or psychic nature attributable to it. Size alone is not an indication for operation, as it is frequently symptomless, while local plan or psychic disturbances, anxiety or worry over a possible defective genital condition may warrant an operation. The operation is divided by Angwin into six steps: the incision; the bringing the spermatic veins in view without disturbing the vas or its circulation; use of crushing hemostats to the veins; securing the cord with a nonslipping ligature; the further disposal of the cord; closing the supercial tissues, and providing suspension of the testicles. Most operative methods include the lifting the cord from its bed which increases the postoperative induration. Induration, itself, should be a rare sequel. The spermatic artery is excised with the spermatic veins without attempting to separate it. He quotes the authority of Bevan as to there existing two sources of blood supply for the testis, namely the spermatic vessels, and the other vessels accompanying the vas, either of which suffices. The article is fully illustrated.

FOCAL INFECTION*

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During the last decade a new interest has been aroused in the subject of focal infection as an etiological factor of local and of general diseases. The wider discussion of the subject made it appear as a new principle. The wider and broader interest in the subject has been brought about by a better knowledge of bacteriology, of modes of infection, and by cooperative laboratory and clinical research.

A focus of infection may be defined as a circumscribed area of tissue infected with pathogenic micro-organisms. Foci of infection may be primary and secondary. Primary foci usually are located in tissues communicating with a mucous or cutaneous surface. Secondary foci are the direct results of infection from other foci through contiguous tissues or at a distance through the blood stream or lymph channels.

Site of Primary Foci.

Primary foci of infection may be located anywhere in the body. Infection of the teeth and jaws, with the especial development of pyorrhea dentalis and alveolar abscess, infection of the faucial and naso-pharyngeal tonsils and of the mastoid, the maxillary and other accessory sinuses are the most common forms of focal infection. Submucous and subcutaneous abscesses, including the finger and toenails, are occasional foci. Chronic infection of the bronchi and bronchiectasis; chronic infection of the gastro-intestinal tract and auxiliary organs of digestion, including cholecystitis, appendicitis, intestinal ulcers and intestinal stasis due to morbid anatomical conditions; chronic infection of the genito-urinary tract, including metritis, salpingitis, vesiculitis, seminalis, prostatitis, cystitis and pyelitis, are not uncommon forms. Infected lymph nodes, which are secondary to the primary foci named, become additional depots of local infection. The secondary lymph node infection may persist after the etiologic, distal, primary focus has been removed or has spontaneously disappeared. Other secondary foci may appear in various tissues as a part of the general or local disease which results from a primary focus. As we shall see, systemic and local disease may occur through infection from a focal point by way of the blood stream. This mode of infection is often embolic in character. The tissues so infected may constitute new foci, which in part explains the chronicity of many local and general infections.

Etiology of Focal Infections.

Focal infection, especially of the structures of the mouth and the upper air passages, is a very prevalent condition. The incidence of infection of the mouth is enormous everywhere. In addition to the presence of innumerable saprophytes in the mouth and pharynx, one may find in the saliva and pharyngeal mucus, streptococci and staphylococci, micrococcus catarrhalis, pneumococci, diphtheria and pseudodiphtheria bacilli, menigococci, tubercle bacilli and many other pathogenic bacteria. C. C. Bass[1] and others state that the endameba buccalis was found in the mouths of 95 and even 100 per cent. of all adults examined. The presence of these infectious mirco-organisms in the mouth and upper respiratory tract indicates unhealthful surroundings and individual uncleanliness. The individual carrier infects others by contact and by other means.

The character of focal infection in various parts of the body is so important that separate consideration should be given to each kind.

Pyorrhea Dentalis and Alveolar Abscess.

Pyorrhea dentalis and alveolar abscess (Rigg's disease) is a condition inci-

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dent to all classes of adults. It is much less prevalent in the young. It is a disease which fundamentally involves the periosteum of the root and neck of the tooth (peridental membrance). It is the chief cause of the loss of the permanent teeth. It may be associated with caries of the crown, and, on the other hand, the crown may remain normal. The infection first attacks the edges of the gum, which may be macerated by decaying food particles between the teeth, or the gum may be injured in masticating hard substances, by toothpicks, and other traumatic agents. Ill health and poor general nutrition make the gums less resistant. The endameba buccalis and various pyogenic bacteria which gain admission to the edges of the gums cause retraction of the soft tissues and the exposed peridental membrane of the neck and root of the tooth become involved in sequence. This periosteum injured or destroyed, there follows softening and ulceration of the soft parts with the end result of acute or chronic alveolar abscess.

Endameba has been known to be a parasite of the mouth for many years. Its relation to pyorrhea alveolaris was first described by F. M. Barrett,[2] in collaboration with Allen J. Smith in 1914. Without a knowledge of the work of Barret and Smith, C. C. Bass and F. M. Johns[1] had recognized the relation of the parasite to pyorrhea and had begun experimental treatment with emetin. The endamebas may be found in the gum lesions and they are numerous in the deeper abscesses where they live on the dead tissues. Bass and other investigators believe that the endameba buccalis is the chief etiologic factor in the development of pyorrhea alveolaris.

From the pus and dead material of alveolar abscess and the infected pulp of the teeth, with a proper technique, culture yields streptococci, chiefly streptococcus viridans and streptococcus hemolyticus, staphylococcus aureus and albus, fusiform bacilli and other less important bacteria. Doubtless the endamebas play an important part in the occurrence of pyorrhea alveolaris and permit infection with the pyogenic bacteria. The bacteria present in the infected areas are the important factors, however, in the causation of general infection from the focus.

Then we have another foci of infection such as acute and chronic tonsillitis and infection of lymphoid tissue in the nasopharynx; mastoiditis and sinusitis of the maxillary and other accessory sinuses; chronic bronchitis and bronchiectasis, focal infection of the gastro-intestinal canal, vermiform appendix, gallbladder and pancreas; and foci of infection of the genito-urinary tract.

Susceptibility to Systemic and Local Diseases From the Focus of Infection.

The high percentage of incidence of localized infection, especially about the head, has already been stated. The greater number of these infviduals affected, both young and old, do not develop acute systemic disease therefrom. A majority of children suffer from chronic infection of the tonsils and nasopharyngeal lymphoid tissue with occasional exacerbations, while the incidence of acute rheumatic fever and endocarditis is relatively small in youth. Nevertheless, rheumatic fever and endocarditis are unquestionably the result of focal infection of the mouth, throat and teeth.

A majority of civilized mankind, who are city dwellers, carry a latent tuberculous focus, usually infected lymph nodes of the mediastium, mesentery or elsewhere in the body. A comparatively small number develop clinically recognizable tuberculosis.

The marked prevalence of alveolar abscess is not generally recognized as associated with the frequent incidence of acute systemic infection. Probably the frequent relation of pyorrhea to rheumatic fever, heart disease, nephritis, and other acute local and general infections has not been given the etiologic importance it deserves.

The escape of a great majority of persons who harbor foci of infection from manifest clinical systemic disease, is the reason given by many thoughtful physicians for disbelief in the etiologic relation of foci of infection to systemic and local infection, especially of the chronic types.

Based upon the present knowledge obtained by clinical and laboratory research and experiments upon the lower animals, there can be no doubt now of the etiologic relation of localized infection of both acute and chronic systemic diseases. Many of the systemic chronic processes are sequential to primary acute diseases, etiologically related to focal infection. Other chronic systemic diseases are primarily due to infection derived from focal infection.

The relatively rare incidence of systemic disease as compared with the marked prevalence of focal infection may be answered, partially, at any rate, by well known facts concerning immunity both natural and acquired.

The natural defenses of the body, due to the bactericidal and antitoxic powers of the tissues, blood plasma and cells, especially the phagocytes, protect the majority of us from the acute infectious diseases. All individuals do not possess an equal degree of natural immunity; some more readily succumb to the invading infectious agents. When the animal body is invaded with the pathogenic bacteria, the natural defenses are increased by their presence in the tissues and blood. The processes are: first, the phenomenon of positive chemotaxis with resulting leukocytosis and the accumulation of leukocytes in the areas of infection of the tissues by the formation of local exudates, liquid (purulent) and fibrinoplastic, which may serve as walls of protection against further direct invasion; second, leukocytic phagocytosis with destruction of the invading bacteria; and third, the formation of protective antibodies in the blood and tissues.

Similar protective processes may be induced in the body by the injection of non-lethal amounts of living or of dead pathogenic bacteria into a healthy man or animal.

It is not improbable that the bacteria of a focal infection may excite the development of additional defenses in the host and prevent the evolution of a sequential systemic disease.

Bacteria may diminish in virulency and pathogenicity and exist as harmless parasites of the skin, mucous membranes and probably also as foci in the tissues (Kolle and Wassermann[7]), for it is known that the reaction of the tissues is influenced by the virulence of the bacteria. A non-virulent streptococcucs would be disposed of by the tissues with but little local or general reaction.

The Diagnosis of the Focus of Infection.

Usually a focus of infection is disregarded by the patient and physician unless it causes local discomfort. When a systemic disease occurs which present-day knowledge associates with a primary infectious focus, the site of the focus must be located. The character of the systemic disease may point to the most likely location of the primary portal of infection. The primary focus of acute rheumatic fever, endocarditis, chorea, myositis, glomerulonephritis, peptic ulcer, appendicitis and chronic deforming arthritis, as examples, is usually located in the head and usually in the form of alveolar abscesses, acute or chronic tonsillitis and sinusitis. One would look for the focus of ghonorreal arthritis in the genito-urinary tract. The failure to find a focus in the expected situation should indicate an extension of the field of examination until the primary infection should have been found. In a superficial and hasty examination the site of the focus of infection may escape detection or the focus may be assumed to be in unifected tissues and organs. Each patient should be carefully interrogated as to the past and present condition; a general examination should be made, including, if necessary, the services of specialists in diseases of the ear, nose and throat, the pelvic organs and the gastro-intestinal tract, and in all patients with evidence of pyorrhea and sinusitis the services of the roentgenologist is demanded.

Mode of Dissemination of Bacteria and Toxic Products from the Focus of Infection—Hematogenous.

Systemic infection and intoxication from a primary focus is usually hematogenous. The bacteria may be compared with emboli loosed from the place of origin and carried in the blood stream to the smallest and often terminal blood vessels. If virulent and endowed with specific elective pathogenic affinity for the tissues in which they will lodge, and if in sufficient number, the invading bacteria will excite characteristic reactions in the infected tissues and a sequential train of morbid anatomical lesions. The evolution of the anatomical lesions and the clinical phenomena aroused thereby are dependent on the type and virulence of the bacteria, the character of the tissues and the function of the organ involved. The specific tissue reaction consists of a local inflammation with endothelial proliferation of the lining of the blood vessel with or without thrombosis; blocking of the blood vessels; hemorrhage into the immediate tissue; positive chemotaxis with resulting multiplication of the leukocytes and plasma cells in the infected area, or fibrinoplastic exudate with local connective tissue overgrowth. We also have these infections going through the lymphatic as well as the circulatory system.

Focal Infection and Anaphylaxis.

Focal infection may be the cause of the condition known as anaphylaxis. The bacterial protein of the pathogenic micro-organism of the focus may sensitize the body cells.

If a foreign protein gains entrance to the body parenterally, via the blood stream or the lymphatics, the animal body always responds to the parenteral introduction of the foreign protein by the production of specific antibodies to that foreign albumen. The formation of the specific antibodies requires a certain period of time. After this interval a second introduction of the same protein, again by a parenteral route, results in a union of the newly-formed antibody with the antigen (foreign protein), which may excite physical phenomena of an explosive charaetcr. These phenomena, the so-called anaphylactic shock, differ materially with various species of animals and with man. In man the typical phenomena may consist of bronchial spasm, urticaria, vasodilitation, and fall of blood pressure, eosinophilia, physical weakness and arthoropathy. In some individuals urticaria or bronchial asthma may be the only expression of anaphylaxis.

Transmutation Within the Members of the Streptococcus-Pneumococcus Group.

Recent coordinate research on clinical medicine and bacteriology, fortified by animal experimentation, has made more evident the etiologic relation of focal infection to systemic disease. The main and fundamental principles which have been proved are:

The apparent confirmation of the transmutability of the members of the streptococcus-pneumococcus group in variations of morphology, cultural characteristics, biological reactions and also of general and special pathogenicity.

Just here I might mention the acquisition of pathogenic elective tissue by bacteria in foci of infection, in culture media and serial animal passage.

Clinical examples have been observed of acute appendicitis; cholecystis; acute gastric and duodenal ulcer; acute and subacute glomerulonephritis; rheumatic fever; erythema nodosum; herpes zoster; malignant endocarditis; simple endocarditis; myocarditis and other acute and chronic systemic diseases, associated with coincident focal infection of the tonsils, accessory sinuses, dental alveoli, the skin and its appendages, the fallopian tubes, the prostate and seminal vesicles and and other foci. Dominant pathogenic bacteria have been isloated from the tissues and exudates of patients at surgical operation; by blood culture; from the urine; from joint exudates and pieces of tissue (muscular, lymphoid, joint capsules and fibrous nodes), removed with the consent and often at the request of patients.

These cultures have been intravenously injected into laboratory animals and at the same time cultures of bacteria isolated from the primary foci of the patient have been likewise used to inoculate other animals.

The evidences of the specific elective tissue affinity of the pathogenic streptococci from the various tissues and likewise of the primary foci is very makred.

The practical application of the principles involved may serve to lessen the incidence and the recrudescence of many local inflammatory organic diseases, notably appendicitis, ulcer of the stomach and duodenum, cholecystitis, glomerulonephritis, acute and chronic arthritis and other abnormal conditions, by the removal of the primary focal cause.

I have seen some of the most severe cases of endocarditis traceable to apical infection. The first consideration and the most important to relieve such condition is the technical side of the complete removal of infection. If we do these things there is no doubt but that the part may be replaced to a normal condition and the tooth or teeth be useful for many years.

The infection to be removed must be considered as not only being in the tooth root itself, but also in the surrounding area or granulation tissue and bone at the apex. Gentlemen, it is up to you as surgeons to apply your asepsis and make access to the infected tooth. In my profession I could not expect a necrotic bone tissue to magically disappear and be rebuilt by normal cell metabolism, without first surgically and asceptically removing each and evety part of the infected area. By this I mean to obtain free access to that part and eliminate all foci of infection. This has been thoroughly demonstrated on the battlefield of the European war. The surgeons go so far as to even cut back from a quarter to a half inch in good tissue in order to be sure they have removed all necrotic tissue, after which they are able to coaptate the edges of the wound and get union by first intention instead of having the wound heal by granualtion.

Realizing the difficulties of a dentist in obtaining such method of procedure to a tooth or teeth with all the surrounding bacteria such as are found in the mouth, requiring isolation from the part to be treated, it is your duty to plunge deeply in the line of surgical and aseptic technique. It has been thoroughly demonstrated to me in my profession that abscessed teeth—by that I mean those from the granuloma to the pus-producing kind—when properly opened through the nerve canal and treated in such a manner as to destroy the infected microorganism, that a goodly percent of these teeth repair in their surrounding tissue.

Allow me to state again that I have seen numbers of cases of desperate systemic condition as stomach troubles, indigestion, neuralgia, neuritis, persistant headaches, muscular rheumatism, joint affections of all kinds, and some of the most obstinate organic heart lesions that I have ever seen, traced to either apical infection, gingival infection or poorly constructed dental procedures; after which were corrected, a perfect cure was established. There are many other pathogenic conditions that one in the routine of practice could relate to you, but, gentlemen, you have heard these preached from all four corners of the books on research, of which there is a new author every day. Let us get busy as doctors, I mean dentists and physicians, work to one common fact and that is to eliminate and establish an absolute preventive and cure, and when she or he presents a condition, let us be capable of a correct diagnosis. If the field of operative dentistry is too large for the dentist to accomplish, let there be separate fields of operation and each man select his field and get proficient. The man who is going to fight those mighty and millions of infective bacteria after they have gained their source of infection, can only recognize one fact, that it does and must require an x-ray picture of the part before and after treatment.

Let us reflect in our mind an x-ray picture of a well-developed apical abscess. You see those cells globulin in type, surrounding the abscess. That is what is called dental granuloma. That is Nature's protective cellular outline, doing all in its power to overcome the infection. X-ray interpretation is the first essen-

tial to a correct diagnosis. Every dentist and doctor should be able to read well all x-ray pictures of teeth. They should have x-ray pictures made by men who are experienced in x-raying teeth. I have seen some of the biggest blunders made on x-raying teeth by experienced x-ray men in other x-ray work, but not teeth.

I believe that every tooth should be saved where there is a possible chance but I do not believe in allowing one, two or three teeth to endanger a person's life. If the canal can be thoroughly cleared and all infection removed and incapsulating and filling will save the tooth, I believe it should be done, but if necessary remove a tooth or more, in order to establish free drainage—and last, but not least, all sockets should be thorouhhly curreted so as to remove all debris in the surrounding tissues and allow the granulation to take place from the bottom. These wounds should be kept open, if necessary, until they are healed from the bottom. Where it is possible, after thoroughly eliminating all necrotic tissue, I think the membrane should be sutured over, thereby giving you a much more rapid recovery. The teeth are necessary organs and are part of the digestive requirements to man. To protect and save these calcific formations God gave you, is as essential to your health as the other functionating organs of the body.

CALIPER TREATMENT

D. W. Crile, Edmonton, England (*Journal A. M. A.*, March 15, 1919), discusses certain points of the treatment of fractures of the femur by the caliper method, introduced into general surgery by Lieut.-Col. Besley, U. S. A., and recommends it very highly. The value of the caliper in these cases lies in the fact that a direct force can be applied to the bone without damaging it and without penetrating th ecortex. Penetration of the cortex implies misuse of instrument or a defect in its construction. The original instrument is better than some of its modifications. Penetration of the cortex depends on several factors, but chiefly on the shape of the caliper points. A long thin taper is the worst. The relative length of the handle arm is also important, and when the handles widely diverge the chance of penetration is greater. The arrangement of the cords at the handle ends has also much to do with the pressure. The position on the femur is another great factor. But the most important of all is the jogging or constant vibration, transmitted over the pulleys by the ropes and instigated by the body tone and movements. Gross movement is not referred to, but a constant fine vibratory one, such as that produced by boring, with a blunt instrument. In Crile's experience it has never been necessary to boer small holes into the bone to hold the calipers. The pressure on the points must be steady, and any variation of the pull of the ropes means pain, erosion or penetration of the cortex, or all three together. The most important points to be borne in mind are: (1) a short, broad tapering point, (2) the prevention of very slight joggling, (3) application to the hard portion of the bone, (4) low leverage (short handle ends not diverging too much), and (5) check appliances. There are several kinds of check appliances in use, the purpose of which is to check penetration by putting a stop betweent the handle ends of the calipers to prevent the points coming too close. This, however, does not prevent the one point from penetrating when the other is pushed away from bone and slips. Crile finds more satisfactory a screw locking both approximation and spreading. The question of corrosion of points does not apply to short heavy ones, which could not in many months corrode enough to do harm. The disadvantages in the use of the caliper are, Crile thinks, vastly outweighed by the improvement in length, early union good position and clearing up of sepsis, decreased number of cases of acute medullary osteomyelitis. stiffness and stiff ankles, and pressure paralyses of the external popliteal nerve. The drawbacks that cannot be avoided otherwise have been met by designing a caliper permitting the pull to be taken from the sides and allowing the knee to be fully extended. It has, however, the objection of being more expensive. Crile describes the method of applying the calipers which he has found most satisfactory. The fracture itself is an important factor in deciding the point of application, and much may depend on the direction of the pull. The rule is to pull in the direction of the long axis of the bone, except in duly considered exceptional cases. The amount of pull will vary according to the amount of shortening to be overcome, the strength of the muscles, the age and site of the fracture, the amount of swelling and tenseness of the deep fascia, and the degree of the infection. "It is my custom to apply 15 pounds directly. If this promises, after twenty-four hours, to stretch the fractures sufficiently, it is enough. If it seems not to perform its function, which can be from 1-4 to 2 inches per day, it is increased to twenty pounds, which is sufficient to stretch almost any fracture to full length, provided the apparatus is correct. One need not hesitate to use 25 pounds, or even 30 pounds for a few days, and often forcible reduction under an anesthetic may be resorted to. If the extra weight causes periosteal pain, it can be reduced. One finds that 10 pounds is the least that avails fully, although others can get results with only 5 pounds, I am told. However, one aims to get a little overlength inside a week and thereafter to hold this gain by tie-on fixed extension, which in reality takes very little pull once overlength is accomplished." The caliper will probably cause some discomfort the first forty-eight hours and perhaps at a later period. Relief can often be given by a little local anesthetic applied near the point of the caliper, such as a pinch of powdered procain on the dressing. Or a temporary reduction of the weight, if it can be done without slipping, will help. The method is applicable to bones other than the femur, such as the tibia, fibula and humerus, and others have had success in these cases. The illustrations are useful in making clear the description of the methods.

A BRIEF DISCUSSION OF TUBERCULOSIS IN CHILDREN WITH SPECIAL REFERENCE TO THE TRACHEOBRONCHIAL GLANDS.

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Our progress in the study of tubercolusis during the last few decades has been particularly illuminating; some long cherished theories have been converted into facts, and some significant facts have developed as if by accident, yet there are many recesses into which the light has not penetrated, and when we stop to think of "what we do not know about tuberculosis" after all the time and talent spent in its study, we are seized with a feeling of helplessness and an overwhelming consciousness of the need for further study and research in order that the missing threads may be gathered up and the riddle ultimately solved.

When in 1882 Koch discovered the tubercle bacillus, it was thought by many that with a known specific cause, there would soon be an end to tuberculosis. But following this epoch-making discovery of Koch's and consequent upon the same, certain astounding facts developed which soon served to shake the faith of those who had foreseen the early eradication of the disease. However, before this disillusionment came, the whole world stood agog because of Koch's announcement of tuberculin as a possible cure for tuberculosis. Quite naturally tuberculin was soon employed for diagnostic purposes, and Pirquet in his attempt to find an easy and sure method of diagnosis, merely proved the almost universal presence of infection with the tubercle bacillus and thus shattered the hopes of those who predicted that tuberculosis could soon be wiped from the face of the earth. Through the stimulus which has grown out of the use of tuberculin for diagnostic purposes, post-mortem and x-ray studies have proven that anatomic tubercle is almost a constant finding, even in young children.

To state briefly the problem of infection, we may start with two fundamental facts, first, the tubercle bacillus is practically ubiquitous; it is to be found everywhere around us, and second, it may gain entrance into the human organism in a variety of ways. After disposing of the small number of cases in which infection takes place through other channels, there are two predominating ideas, the inhalation idea and the ingestion idea. In support of the inhalation theory we have to consider dust infection, championed by Cornet, and the droplet infection of Flugge.

By the ingestion theory we understand that the tubercle bacilli, bovine or human, enter by way of the gastro-intestinal tract. Without carrying the discussion further, we may say that one great fact is outstanding; with the few exceptions mentioned, the tubercle bacillus must pass the lips or the nostrils. After this is said we cannot be dogmatic about the portal of entry. Krause points out the fact that in support of the above theories, only the lungs and the bowels have been considered as portals of entry, and states that none of them give attention to the frequent probability of primary infection of the respiratory and digestive tracts, higher up than the lungs and intestines.

The Pirquet test shows that the greater part of mankind is infected first in childhood and yet pulmonary and abdominal lesions are relatively rare at this early age. After discussing this phase of the disease, Krause again points to the fact that superficial tuberculosis, especially of the lymphatic nodes of the neck, is perhaps the most common manifestation of the disease in childhood. He has called attention to the fact that about 50 per cent. of human beings receive their initial infection between three and seven years of age, just at the time they establish a more intimate contact with the outside world, or in other words, intimate contact with the material that carries the turebcle bacilli, whether food, droplets, dust or contaminated hands. In fact "hand to mouth infection" is given a prominent place in Krause's discussion.

Working with an attentuated strain of the tubercle bacillus, Krause has recently produced tuberculosis of the tracheobronchial lymph nodes in the guinea pig by means of the usual subcutaneous injection, thus upsetting the well known teaching of Gohn concerning the primary focus. This leads to a discussion of the frequency of tuberculosis of the tracheobronchial lymph nodes in children. Gohn attempted to prove all such cases as air borne with a primary focus in the lung, but his methods were such that his conclusions could not be accepted without question. Krause's recent experiments at least prove that the tracheobronchial glands may ultimately receive tubercle bacilli which have travelled from remote parts of the body and which have found no demonstrable lodgment in the lungs.

When we consider the peculiar tendency of lymph nodes to gather tubercle bacilli, and then give attention to the strategic location of the tracheobronchial glands, it is not difficult to understand why they are so frequently involved.

The tracheobronchial nodes become the converging point of all foreign particles that reach the lymphatics of the lungs and the lungs constitute the converging point for all foreign particles which reach the blood circulation. The other organs of the body receive only their own systemic blood supply, while the lungs receive all the blood from all the other organs of the body, and thus the tracheobronchial glands receive, not only the foreign particles which reach the lungs through the air, but also those which come through the blood stream. Though the portal of entry may be uncertain, and the primary focus not determined, the tracheobronchial glands are usually infected amd may be demonstrated during life by physical examination and the use of the x-ray.

We should ever keep in mind the fact that the great majority of children are infected and that infection may at anytime become clinical tuberculosis and that the first symptoms are those of toxemia, namely, weakness, undue fatigue, poor appetite, failure to gain, or loss of weight and nervous irritability. This group of symptoms becomes particularly significant when there is a history of contact with those who are suffering from tuberculosis, or when there are signs of local involvement, as cough, hoarseness and streaked sputum. The general appearance and the physical condition may or may not suggest tuberculosis. When it is impossible to find any other cause for the symptoms of toxemia, a thorough examination of the chest should be made with special reference to interscapular dullness and the presence of D'Espine's sign. In addition to the latter we may get certain changes in the breath sounds, the most frequent being a diminution in intensity on the side of greatest involvement, this probably is due to pressure resulting from enlargement of the hilus group of lymph nodes. Any attempt to diagnose tracheobronchial adenitis without the use of the roentgen-ray is incomplete, and yet roentgen findings must be interperted in the light of history and physical examination. The Pirquet test is of value, especially in children under four years of age. It should be repeated two or three times before considered negative. Pulmonary tuberculosis or involvement of the lungs proper, while comparatively rare in infancy and childhood, is not so very infrequent, and when present requires the same diagnostic procedure as that employed in adults.

At the Oklahoma City Tuberculosis Dispensary we have examined 135 children during the past year and the following interesting data has been gleaned from the more complete annual report of the dispensary. I have tried to gather up only those facts and symptoms which might have some relation to tuberculosis. Of the 135 children, 50 gave a history of exposure to open cases, 70 were exposed to suspected cases and 15 gave no history of exposure. 116 gave a history of measles, 50 had pneumonia, 34 influenza and 86 gave a history of whooping cough.

A history of the following symptoms was obtained: Cough 59, expectoration 29, pain in chest 24, pluerisy 14, hemoptysis 2, night sweats 11, loss of flesh 25, loss of strength 34, hoarseness 17, fever 19, loss of appetite 28, disturbed diges-

tion 27. The physical examination revealed the following: Weight below standard 73, height below standard 17, general appearence good, 95 fair 48, poor 21. Type of chest normal 121, abnormal 14, superficial lymph nodes palpable 110 (some were not reported), tonsils hypertrophied 80, dullness elicited by percussion 89 (with few exceptions the dullness was interscapular), D'Espine's sign was present in 35, rales in 29.

Every case examined was given a card for complete laboratory and x-ray of chest, but it has been impossible to get all the children to report for this work, consequently only 69 were x-rayed. The following interpretation was recorded in connection with these plates: Tuberculosis of the tracheobronchial glands alone, 11; tuberculosis of the tracheobronchial glands with peribronchial thickening, 29; tuberculosis of the tracheobronchial glands and peribronchial thickening, with involvement of the lung tissue, 19; non-tuberculosis infection, 3; negative 7.

The following gives the diagnosis as recorded in the 135 cases: Tuberculosis of the hilus alone, 34; tuberculosis of the hilus with peribronchial and lung involvement, 44; doubtful, 40; cases with non-tuberculous infection, 5; negative, 12.

The accompanying cuts show the x-ray findings in the various types of tuberculosis found in children. Figures Nos. 1 and 2 are particularly interesting because they represent two types in the same individual. This child, aged 15 years, was in school when she first came for examination. She was placed in the hospital for diagnosis December, 1917, and Fig. 1 shows the x-ray findings at that time. A large shadow representing a mass of enlarged glands at the right hilus with very slight tracings toward the periphery. At this time she was having a temperature of 100 to 104 and very rapid pulse. The physical examination revealed only enlarged cervical glands and interscapular dullness with diminished breath sounds on the right side. After a diagnosis of very active glandular tuberculosis predominating in the tracheobronchial glands, she was placed in the Oklahoma Cottage Sanatorium.

After four months management with absolute rest in bed, her temperature began to remain about normal and at the end of five months she had gained about 20 pounds and looked like a different girl. She was taken from the sanatorium against our advice and about 10 months later she returned in a pitiable condition with great emaciation, cough and fever, with tubercle bacilli in the sputum. Figure 2 shows the x-ray findings April 14, 1919. Extensive pulmonary involvement in the upper half of both lungs, predominating in the right.

Figure 3 represents a girl of 12 years in fairly good physical condition, who lived with an open case for several years. Typical hilus shadows are to be seen which are of the butterfly type and represent healed tracheobronchial glands. Her sister 10 years of age shows the same.

Figure 4 shows tuberculosis of the hilus with linear tracings toward periphery with well defined calcified glands on the right. This represents the findings in a boy 14 with no history of exposure to tuberculosis, but whose living conditions have always been very bad. Four brothers and sisters show practically the same x-ray findings.

Figure 5 shows advanced pulmonary tuberculosis with positive sputum, in a boy of 12 years who had long continued exposure to open tuberculosis. In spite of the advanced stage of the disease, the boy manifested very little evidence of toxemia and was keeping up his school work and getting up at four o'clock A. M. to deliver papers.

Figure 6 shows an infant of five months with history of cough from the 10th day after birth, no known exposure. Physical examination revealed fine crackles in both lungs. A smear from the phlegm obtained by tickling throat with gause, showed tubercle bacilli. It is possible to see the indefinite shadows extending through both lungs.

XUM

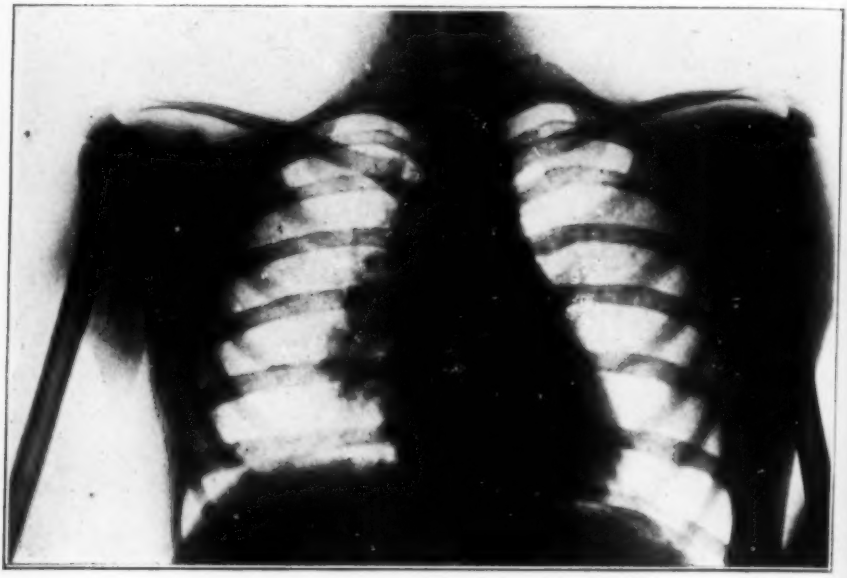

FIGURE 1

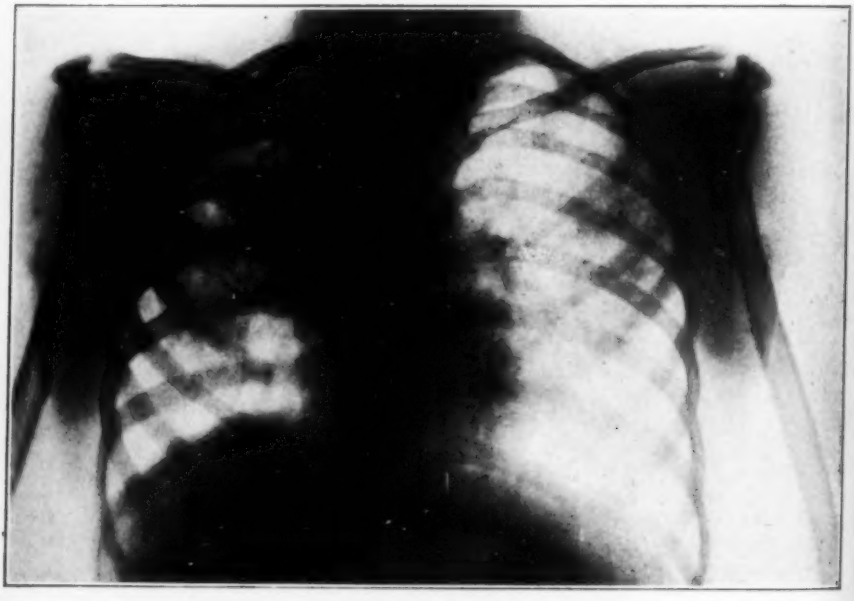

FIGURE 2

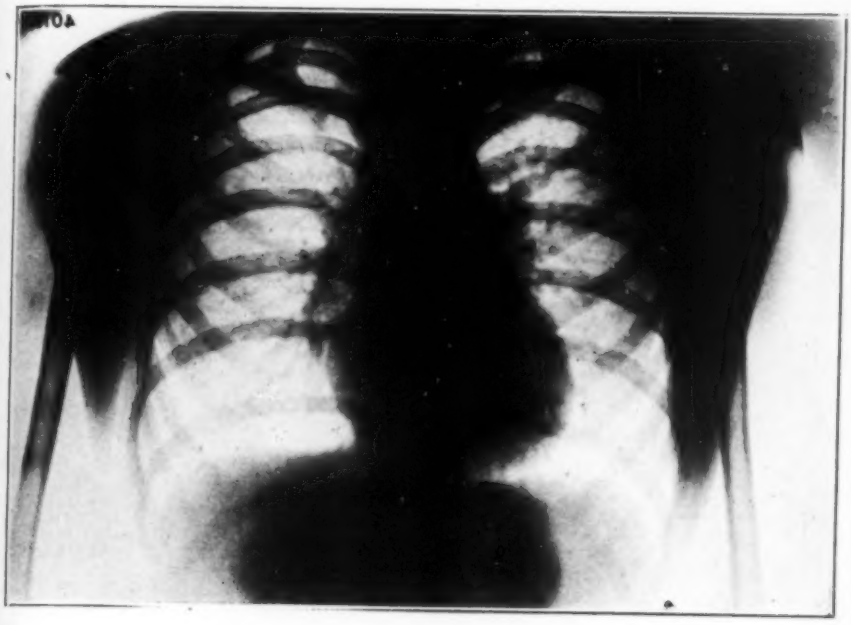

FIGURE 3

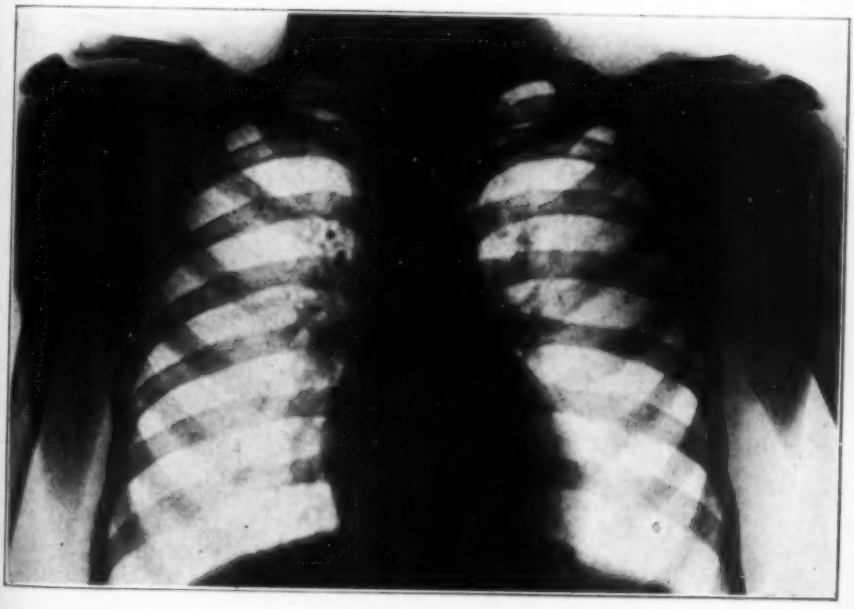

FIGURE 4

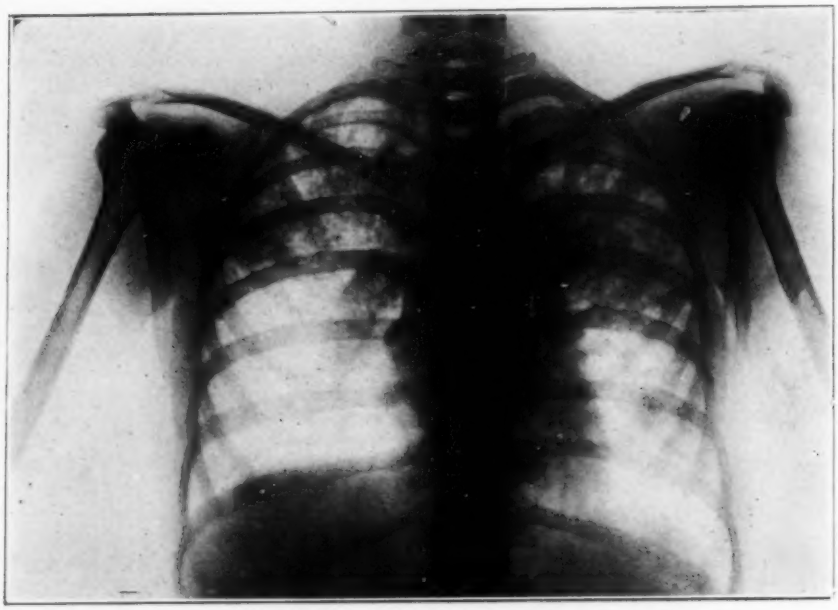

FIGURE 5

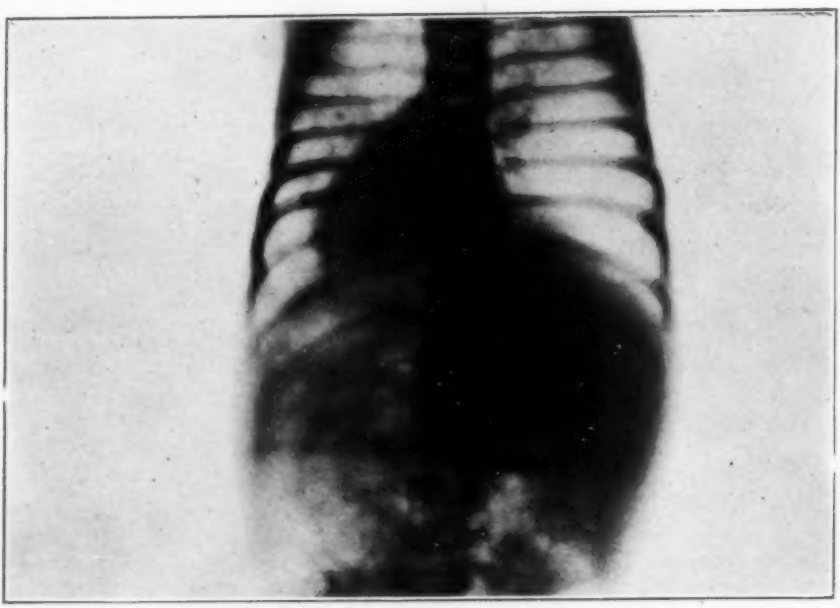

FIGURE 6

CASE RECORDS.*

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Case records, like every other important part of a successful doctor's work, must have certain definite purposes in view and more or less systematized methods of procedure. So much has been written in the past and resurrected and discussed in the current medical literature that even an attempt to revise any considerable portion of the meritorious discussions would be imposing upon your good nature.

Surgery, Gynecology and Obstetrics, the *Modern Hospital*, and the *Journal of American Medical Association* have all carried numerous appeals and various methods of different individuals for the keeping of these records. One of the most satisfactory and comprehensible articles giving detailed description for action is the *Bulletin of the American College of Surgeons*, Vol. 4, No. 1, (January, 1919) by Dr. John G. Bowman, Director of the College, which may be read with pleasure as well as profit because it tells you what to do and in a general way how to do it.

The important thing which has impressed itself upon the writer for a number of years is that all of these plans fail unless there is a personality behind it to make the wheels go round. The case and condition, together with the examiner's ability, time and opportunity, will determine the length of record.

The purpose of this paper is to emphasize the importance to all parties of a case record and to recommend the very careful reading of the plans as outlined in the above journals in the hope that each individual may be able to adopt sufficient amount of information from them to suit his individual needs and requirements.

The writer for a long time has kept some case records and from this experience, reading, observation and correspondence, the following points or suggestions are presented for consideration.

(*a*) From the business world we can easily draw some valuable lessons in efficiency. The changed economic conditions demand increased efficiency and require the saving of the doctor's time for other service than attempting to write case histories in legible long hand. The writer has for some time past been using the dictaphone with considerable satisfaction.

(*b*) The preparation of a case record should be approached with the same degree of thoughtful care one undertakes to perform a surgical operation. A useful case record cannot be obtained by a novice or one unskilled in this special line, so it must be someone's appointed work. It must be done regularly, orderly and after some acceptable plan or method. The constant repetition of the work improves the technic which not only gives a superior case history in a shorter time, but adds materially to the intelligent grasp of the salient points in the case.

(*c*) As the patient and his care is the unit about which the resources of the physician revolve, the responsibility must be fixed for every important step in this professional endeavor, and someone must be designated to secure and complete the case record unless the attending physician performs this duty himself. The physician must secure the personal history and patient's reasons for seeking medical aid, being governed by education, training and experience and guided by common sense, the case in hand, and the published requirements of the American College of Surgeons.

(*d*) The result of examination, laboratory reports, treatment, conduct, out-

*Read before Tulsa County Medical Society, April 14, 1914.

come, and other features of the case are recorded as soon as developed. The use of the dictaphone enables the physician to make this record at anytime during his convenience, such as completion of other work, investigation of certain details which would enable him to present it in a more orderly and intelligent manner.

(*e*) The record is then taken to the typist who transcribes it and at the close of the case this typed copy and any additional data is included with the charts in an individual envelope and filed at the hospital, if it has been a hospital case. The personal history and case records are at no time attached to the chart board where some curious or impolite person might read them, but are always kept as a sacred trust, which they really are, away from prying eyes.

(*f*) As a true case record reflects through its presentation the attendant's visualization of the patient, it is the time-keeper of professional progress. It encourages systematic study and education and safeguards the patient's interest and the physician against suits for damage or embarrassing situations due to the

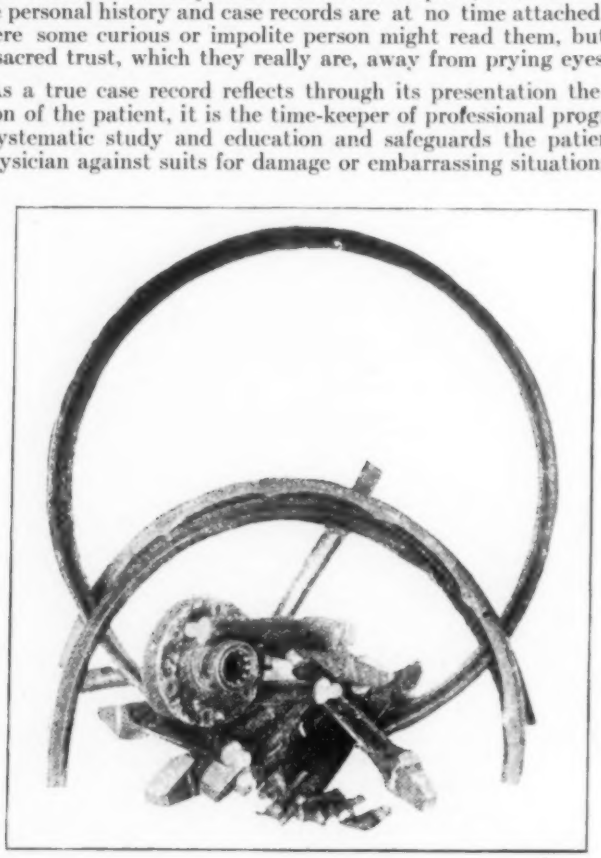

FIGURE 92*

request for or return of patient to obtain proper information relative to previous diagnosis, treatment or operation.

(*g*) The record, to be useful, must be true to the ascertainable history and condition of the patient, yet brief and systematic with proper headings so one may instantly refer to any feature. Dr. John G. Bowman, Director of the American College of Surgeons, says, "Novel writing under the guise of case records is a waste of time, energy and money."

(*h*) The writer has a loose leaf book for the office where a record of his cases is kept with such personal information as may be needed to facilitate the study.

*Courtesy Murphy's Clinic, Vol. 3, No. 2, April, 1914.

(*i*) The standardization of the modern hospital is a worthy ideal. However, the complex conditions now existing make it almost impossible, unless the various units which go to make up a hospital, such as patients, physicians, surgeons, nurses, dietitians, anesthetists, laboratory and social service workers as well as hospital administrators, are all standardized and correlated into one grand symphony of success. Yet by the constant use of known and approved procedures much good work may be done and continued progress made.

(*j*) The proper keeping of case records will force any person with pride to study the patient's welfare more thoroughly. Health is the greatest resource of any country, so why should the physicians be slovenly and unbusinesslike in their book-keeping methods with reference to this wonderful treasure?

(*k*) The true progress of medical education is largely dependent upon accurately chronicled case records. When these case records are made the stepping stones to professional reputation and medical men are to be judged by their diagnostic ability, then greater care will be exercised by conscientious persons in making of these records.

FIGURE 93*

(*l*) Diagnosis is the key-stone in the arch of medicine.

The late Dr. John B. Murphy, one of the greatest, if not the greatest all-round surgeons of his time, said of diagnosis; "You must learn by a system of personal investigation of actual patients, and if you have such a system clearly in your minds, you will finally become diagnosticians and you will be capable of doing ably that thing on account of which the profession suffers most because it lacks the most; that thing through deficiency in which we have lost more people's confidence than through any other one, namely, diagnosis. People do not expect us to cure them of all their ills, because they all expect to die sooner or later. They all recognize in life so dangerous an undertaking that none of them

*Courtesy Murphy's Clinic, Vol. 3, No. 2, April, 1914.

expect to get through it alive. * * * * Success rests almost entirely on arriving at a diagnosis."

This distinguished teacher further says; "Failure carefully to examine cases is the most common cause of error. * * * * On what is the diagnosis to be based? The clinical course, the symptoms and signs, the physical and laboratory findings. I have often used the simile that a diagnosis is like a wheel, which is composed of a hub, spokes, felly, and tire, all in proper relationship to one another. These materials and parts separately do not constitute a wheel. They must be assembled to constitute it. The diagnosis of a diseased condition is the wheel, but is completed only by assembling all the details of the patient's illness in proper relationship to one another. First, there is the history—the story of how the disease began and when it began. It is the hub of your diagnosis. Second, the clinical course, the signs and symptoms, in chronologic order, represent the spokes and the felly. This practically makes the wheel, but you can often strengthen it or add finish by placing on it a tire, which is represented in our diagnostic wheel by the assistance we receive from the laboratory in the way of tests and microscopic examinations. A good diagnosis is a scientific construction. It must be built. Knowledge, perception, painstaking care, and the interpretation of clinical history, symptoms, signs, and laboratory findings are means needed to construct a diagnosic wheel no matter how mild or severe in degree the pathologic condition may be. The patient is entitled to the best service, and we must not only be prepared to furnish, but must render, it."

Properly kept case records will increase the intelligence, encourage the industry, and develop the integrity of any physician.

Let us use the means and measures at hand to improve ourselves in medicine and increase our usefulness to society. The case record is an individual, personal responsibility inseparably associated with the attending physician's effort to arrive at a diagnosis and proper advice and treatment. The gathering and grouping—the analyzing or putting together the symptoms and signs of disease—belong to the doctor, the recording may be done on dictaphone or by typist. The completed record is the written answer to the patient's prayer for relief.

IRRITABLE BLADDER IN WOMEN

C. A. L. Reed, Cincinnati, (*Journal A. M. A.*, Feb. 1, 1919), describes irritable bladder in women as being a condition in which severe pain in urinating and frequent desire to urinate make life miserable for the patient, and trying to the physician. The underlying condition is abnormal sensibility of the lining of the bladder itself which may be caused by conditions either external or internal. Those working from the outside usually act by pressure, such as in cases of pregnancy, uterine displacements or tumors. Among the conditions arising within the bladder and that have a causative bearing on the symptoms acute infection, generally gonorrheal, tuberculous infection, local growths, benign or malignant; calculi; diverticuli, etc., may be named. In a certain proportion of cases, circumscribed ulceration, the so-called Fenwick ulcer near the outlet has been found the essential condition. Another form of ulcer is specially mentioned, which might be designated as the Hunner ulcer, first described by Dr. H. L. Hunner; or, better, as the punctate ulcer of the bladder, as being more descriptive. Importance of differential diagnosis in these cases from the early thorough examination is emphasized, and three cases are reported. The symptoms are those of the irritable bladder first mentioned, and the urinalysis finidings are usually negative. Reed reproduces the description given by Hunner as he has found it most accurate and helpful. He calls attention to a glazed dead white appearance of a portion of the bladder mucosa as seen through the cystoscope. Sometimes there are small congested areas in the immediate neighborhood of this, which sometimes ooze blood and are often surrounded by an area of edema. In certain of these cases, Reed has observed a granular appearance suggestive of tuberculosis, but which we now know, from Hunner's research, is due to the development of minute cysts with mucous lining. The diagnosis of punctate ulcer is based on the history of the case, the existing symptoms and the urinalysis and cystoscopic findings. The causes have not yet been fully determined, but the possibility of focal infection is admitted, though longer observation is required. The pathology, so far as developed, seems to be that of a chronic interstitial nephritis, more or less involving the bladder wall. The treatment seems to be reduced to surgery, the complete excision of the ulcer-bearing area. The original method, devised by Hunner, was extraperitoneal, and was employed in the first of Reed's cases, while his other two were treated by a transperitoneal operation.

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THIS IS THE OFFICIAL JOURNAL OF THE OKLAHOMA STATE MEDICAL ASSOCIATION. ALL COMMUNICATIONS SHOULD BE ADDRESSED TO THE JOURNAL OF THE OKLAHOMA STATE MEDICAL ASSSOCIATION, 308 SURETY BUILDING, MUSKOGEE, OKLAHOMA.

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Articles sent this Journal for publication and all those read at the annual meetings of the State Association are the sole property of this Journal. The Journal relies on each individual contributor's strict adherence to this well-known rule of medical journalism. In the event an article sent this Journal for publication is published before appearance in the Journal, the manuscript will be returned to the writer.

Failure to receive the Journal should call for immediate notification of the editor, 307-8 Surety Building, Muskogee, Okla.

Local news of possible interest to the medical profession, notes on removals, changes in address, deaths and weddings will be gratefully received.

Advertising of articles, drugs or compounds unapproved by the Council on Pharmacy of the A. M. A. will not be accepted.

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EDITORIAL

WILL THE CIVILIAN PROFIT BY WAR EXPERIENCES?

A very respectable number of Oklahoma's young manhood is back in civil life after varying degrees of service, experience and time spent in the army. We believe every one of them returns with new ideas as to the proper care of his body, his people and his surrounding neighbors and premises. Many of them are enthusiastic exponents of sanitation, prophylactic vaccination against disease and avoidance of those due to his own indiscretions. He comes home, as a rule, to paraphrase slightly "Unwounded by Woman", protected for years against smallpox, for a time against typhoid and her sister infections, paratyphoid. He knows the dangers of untreated water, of exposed waste and sewage, of crowded living conditions, of filth in all garbs, the value of regular living, good food and clothing. In practically every case he comes home a better man from all viewpoints. If he is of an investigative turn, analytical and retrospective, he will ponder shortly on the deaths during his absence. When he understands the civilian death rate from influenza, compares it with his army rate, he will mentally enter upon his approbation of prompt treatment on strict lines as a possible factor. If his kinsman died from typhoid or had it, he will promptly approve his vaccination.

In all seriousness, is it right to discriminate against our people? Why not apply the protective and harmless measures of the army, as far as practicable, to our citizens, cities and towns? Why not promptly penalize the grower of flies and mosquitoes? Is the soldier any better than his relatives? Why shall we not have inspection of his civilian relatives to discover and ward off incipient disease? In the face of the very obvious lessons of the war, Muskogee County sends to the Legislature a misrepresentative who would undo the practical effects of common sense by omission and opposition. This gentleman opposed inspection of school children on the ground that it would "Frighten" them, but finally, and there lies the serpent,—admitted that he was a Christian Scientist. Very likely had he been in the Draft age he would have objected to everything on "Conscientious" grounds. At the same time, due possibly to the same influence, school inspection in Muskogee was abrogated to all practical intents.

At the very time when the Nation was straining every effort to keep its energies at par we witness the amazing spectacle of a misguided portion of those at home reducing our force by every means.

In sincerity we suggest that now is the time to align all sensible people to the principle that a danger to the individual is a danger to the Nation. The returning soldier is a practical exponent of that. With his aid and that of intelligent people we should make long strides toward improvement of useless conditions. Necessity and enlightenment has greatly broadened the powers of the State Health Department. The legislation on tuberculosis and venereal control will prove of inestimable benefit. Why not make it unanimous?

TUBERCULOSIS SANATORIA LEGISLATION.

Oklahoma took a far step forward during the last legislature in providing for the establishment of three sanatoriums for the treatment of tuberculosis. The salient features of the law make the following provisions:

Supervision by the State Board of Health, the State Commissioner to immediately divide the State into three districts as nearly equal in population as may be, to select in each district a location suitable for a sanatorium, with due regard to accessibility from all points in the district.

Joint supervision is provided in that the Board of Affairs shall handle all matters of business, the State Board to handle admissions, treatment and discharge of patients.

A Bureau of Tuberculosis is provided for in the State Health Department, the Commissioner to appoint a Chief who shall be an expert in the prevention of tuberculosis, experienced in sanatorium management and construction.

Each institution is to have a superintendent residing at the sanatorium, who shall appoint necessary assistants and nurses, including a public health nurse who is required to visit tubercular patients within the district and perform other duties as prescribed.

Provision is made for acceptance of pay or private patients able to defray such charges as may be fixed by the superintendent.

Patients unable to pay shall be admitted on request of county superintendents of health, public health nurses and the county commissioners concerned, or the State Board of Health. County commissioners shall pay not less than ten, not exceeding fifteen dollars weekly for all necessary care of patients entered from their counties.

The law applies only to those resident in the State for one year.

Excise Boards are authorized to levy tax, not in excess of one mill, not to be held as current expense, but for a special purpose known as the "Tuberculosis Fund".

Each District Superintendent is authorized to provide for the opening of free tuberculosis dispensaries at centrally located points where patients may be properly examined by the designated officers.

CURRENT MEDICAL LITERATURE

Conducted by
DRS. LeROY LONG, CURT von WEDEL, Jr., and L. J. MOORMAN,
OKLAHOMA CITY

(Translated from original article in *La Presse Medicale*, February 24, 1919. Abstracted *in extenso*.)

LeRoy Long, M. D.
OKLAHOMA CITY

THE INTRAVENOUS INJECTION OF PEPTONE IN INFECTIOUS DISEASES.

(Les Injections Intraveinuses de Peptone dans les Maladies Infectieuses.)

Nolf, of Liege, speaking by invitation at a conference of the Paris Faculty of Medicine, January 21st, 1919, calls attention to a question which he says has greatly interested him for four years.

Before the war he had given much study to the action of peptone when introduced in various ways into the bodies of animals used for experimental purposes.

He had advocated, in the case of man, the subcutaneous injection of peptone in hemophillia, the various hemorrhagic states, paroxysmal hemorrglobinuria, etc.

For a long time he had believed such employment of peptone valuable in menacing abdominal meteorism, for he had proven on numerous occasions that there was energetic and persistent contraction of the intestines of the dog, which had had peptone by intravenous injection.

Practical application of the theory was put into effect in July, 1916, when, in the case of a woman who had pronounced meteorism as a result of a severe typhoid infection, three centigrams of dry peptone was used for each kilogram of weight. The total quantity employed was one and a half grams. This was dissolved in 200 c.c. of normal saline solution (solution saline isotonique). The injection (intravenous) was slowly made, the time employed being about thirty minutes. In about an hour and a half the patient had a violent and prolonged chill, followed by a temperature of 40.5 to 42 c. In an hour the fever began to subside slowly. The next morning the temperature was 36.6. At the same time there was an improvement of the general condition. Later the temperature went up again, but not to the height attained before the injection, and the patient, whose condition had been grave, progressed in a satisfactory way, the course of the disease being, henceforth, benign.

In time the meteorism disappeared, but this local result, which had been the reason for the intervention, disappeared after there was improvement in the pulse, the temperature and the general condition.

The author remarks that the reaction had been too distinct, the results too happy, not to warrant new trials. Since then he has treated a number of cases of grave typhoid by intravenous injections of peptone, and with success.

An analysis of the effects observed in the first case, and in those which followed, shows that the intravenous injections produce two very distinct results—one immediate and one more remote. A careful examination of both is interesting.

The immediate results depend upon the dose injected. If it is equal or inferior to one centigram per kilogram of the weight of the patient; that is to say, if in a patient of average weight one injects 5 to 6 c.c. of a 10 per cent. solution, one most often observes a rise in temperature, which takes one or two hours after the injection, and lasts a few hours. If the dose is increased a little, say 7 to 10 c.c., one observes the same initial rise, accompanied by a severe chill, and in the average case this takes place one hour after the injection. The chill lasts 20 to 30 minutes. It is followed by a fever which is usually succeeded by a sweating stage.

The temperature falls rapidly in the hours which follow, the sweating being profuse. Three or four hours after the beginning of the sweating stage the temperature is normal, or nearly normal, and remains there for a long time.

When the injection is made in the morning the lowest temperature is often between 4 and 6 in the afternoon. Usually the temperature remains down during the night, sometimes presenting a transitory rise, of little importance, in the first hours of the night. Sometimes the temperature goes down more slowly.

The author has observed that a typical reaction, that is to say, a fall of temperature notable and persistent, is more difficult to obtain during the first ten days of the typhoid than later.

It is believed that 12 to 15 c.c. of a 10 per cent. solution may be used in a subject of average weight and robustness, but it would seem that it is safer to fix the average maximum dose at 10 c.c., and this should be diminished from time to time in accordance with the improvement in the condition of the patient.

It is the custom of the author to make the injections early in the morning for the reason that the febrile stage will have been passed during the afternoon, and the patient be permitted rest and sleep at night during the febrile stage. He directs that the patient drink nothing but pure water, or sweetened water during the night before the injection.

It has been observed that the temperature does not rise again to the level before injection until the evening of the next day after the injection. It is advised therefore, to not repeat the injection more often than every two days for fear of demanding of the organism too great an effort to react.

The effect on the temperature is evidently not the result of action on the thermic centers, for it has been observed, in the case of those patients, in which the effect is not obtained, there is presented a high temperature instead of a drop. It seems, rather, that it may be an expression of a reaction more extended, which manifests itself by other signs. The patient feels better, is less excitable, and inclined to sleep. During a few hours he has a truce.

The author believes that the injection does not act as a simple "antithermique", but the "antithermique" effect seems to be the expression of an anti-infectious influence.

Attention is called to the remote effects (effects lointains). By repeating every two days there is obtained a persistent effect on the average temperature curve, but, in addition, the nervous excitement, the delirium, the insomnia, the prostration is relieved and finally disappears. After a few days the appetite returns, the diarrhea checks, the stools become more firm. If there has been meteorism it disappears. If the tongue has been dry it becomes moist. Even if the disease continues for several weeks, it runs a very benign course.

Often the benign influence of the injection may be proved by the disappearance of microbes from the circulating blood. Frequently there is a distinct diminution in number 48 hours after the first injection. In the case of many patients two injections render the blood sterile. Sometimes it takes longer, but the possibility of obtaining the result seems to prove that it acts as an anti-infectious agent.

The anti-infectious action is not specific. It occurs in various acute septicemias as well as typhoid.

Since the action of peptone is not specific, but consists probably in a stimulation of the means of general defense of the organism, it appears advantageous, *a priori*, to employ at the same time agents more or less specific. Thus, in typhoid, urotropin is given after the manner advised by Chauffard, sodium salicylate in polyarthritis, etc.

The author calls attention to certain dangers in the intravenous use of peptone, the first of which is a lowering of the blood pressure. This is noticed more particularly in those who have marked infections, and he is of the opinion that the infectious condition predisposes to this "*hypotonie*". This seems to be borne out by the fact that the subject in good health, or but lightly infected, has scarcely any inconvenience in this way.

When the reaction is marked the patient complains of headache, tumultuous beating of the heart, and often, also, arterial throbbing in the lumbar region, soon after the beginning of the injection. The face is injected, the pulse frequent, small and compressible. The respiration is accelerated, and in the case of those having pulmonary affections, there is a disposition to cough, and if it is not repressed it leads to nausea and vomiting.

When these phenomenae are not very marked they pass in a few minutes. But there may be more distressing symptoms such as difficult breathing and a very frequent pulse, even 140 to 160. After a little while there may appear on the trunk, limbs and face an eruption. The symptoms are like those in anaphylaxis from injection of horse serum.

In addition to the type of injection, the quality of peptone and the rapidity of the injection are other elements which bring about the above syndrome.

One should reject any sample of peptone which gives the least odor of decayed meat. It should be injected slowly and with extreme care—more so if there is any reason to believe that the patient is very sensitive to the product.

The injection should be made with a Luer syringe, armed with a fine Pravaz needle. An assistant should count the pulse, calling out in a loud voice the number each quarter of a minute. If it reaches 35 per quarter of a minute, the injections should be arrested until it slows. Usually several minutes should be occupied.

A safer way is to administer the same dose dissolved in 150 to 200 c.c. normal saline, taking 15 to 20 minutes, and this method is suggested as applicable to those physicians not accustomed to its use

If the blood pressure is low, adrenalin should be administered beforehand, and it is a good procedure to add one half milligram of adrenalin to the solution of peptone in pronounced cases of low pressure.

By taking these precautions one may employ the agent in the case of patients seriously ill.

Having described the effects of the treatment and its technique, the author remarks that it remains for him to say a few words about its rationale, so far as the immediate reaction is concerned.

He has not been situated so he could carry out extensive experimental work with animals, but he points out that there is a striking analogy between the immediate reaction of the patient to the peptone and the reaction that one observes after therapeutic intraventions, notably after intravenous administration of the preparations of the colloidal metals, such as gold and silver.

At first judging from the action, *in vitro*, it was supposed that the colloidal metals, introduced into the blood streams, would act, if not as germicides, at least in a way to inhibit germ activity.

As a matter of fact, good results have followed the intravenous use of thel coloidal metals,

but the author is of the opinion that their efficacity has not been due to the metals but to materials added by the manufacturers of pharmaceutical products in order to make the emulsions (suspensions) of the colloids more stable,—such as gelatin, serum, peptones, etc, for it is well known that the suspension of these metals in distilled water is very unstable. He refers to the experiment of A. G. Auld, an English physician, who administered to his patients these agents which were destined by the manufacturer to stabilize the suspension, without a trace of metal, the results being exactly the same, viz; chill and fever, followed by sweating, lowering of temperature and a more or less favorable condition of the patient.

The author endeavors to prove that even if the colloidal substances are completly exempt of the materials usually used to make them stable, still they produce the same kind of reaction, and he refers to the experiments of Contejean, Gley, Hedon and Delezenne, pointing out that the latter insisted that great numbers of substances, such as bacterial toxins and organic extracts, would produce the same kind of reaction observed after the intravenous use of peptone—a condition which the author aptly calls "shoch peptonique". In reality, all substances having the qualities of an antigen produce like results (so far as the symptoms of reaction are concerned.)

Gley demonstrated that the fresh serum of the dog injected into the veins of the same dog produced the symptoms noted above, and Widal has demonstrated the same thing in the case of the human being, he and his pupils drawing blood from a patient, defibrinating it, and injected the serum into the same patient. In such a case it would be exact to say "shock produced by antigen", but since the effect of the intravenous use of peptone was first and more carefully studied, it would appear convenient to take it as a type.

The conclusion is reached that every substance, whatever its nature, will be able to produce the reaction effects of peptone, *provided it is introduced into the blood stream in such a way as to interfere with the protein composition or the colloidal equilibrium.* In fact even distilled water introduced rapidly may produce the effects.

It is necessary to make a clear distinction between the legitimate effect of peptone when properly administered and the condition of shock above described, which follows its rapid administration, or its administration in too large a dose.

The proper therapeutic dose properly given is followed in about an hour by a short chill which is succeeded by defervescence and abundant sweating.

It may be useful to recall that such a dose in a normal man in health does not produce any visible effect.

It remains to point out the cause of the efficacity and to determine the mechanism. Up to this time sufficient animal experimentation has not been done, but it is useful to recall that in the defense of the organism against microbes two elements are essential—the white blood cells and the antibodies in the blood. The introduction of peptone exercises a striking action upon the white blood cells, and upon the protein equilibrium of the plasma, and upon "certains appareils producteurs des albumines du plasma".

At present it is not possible to point out an exact infection in which peptone can be regarded as a specific, but, nevertheless, it presents certain practical advantages when a good preparation is employed.

It can be used in cases in which the causative germ is unknown.

It sensitizes the organism but feebly, there being but little danger of violent anaphylactic manifestations in cases of prolonged treatment, or the resumption of treatment after interruptions.

PERSONAL AND GENERAL NEWS

Dr. J. S. Rollins, Paden, has moved to Guthrie.

Dr. J. W. Craig, Vinita, visited Chicago in April.

Dr. D. Long, Duncan, is attending the Chicago clinics.

Dr. J. C. Dunn, Bartlesville, has been appointed county physician.

Dr. W. H. Powell, Sulphur, attended the New Orleans clinics in April.

Dr. J. F. Messenbaugh, Oklahoma City, visited the Chicago clinics in April.

Dr. R. M. Anderson, Shawnee, visited the Chicago clinics in March and April.

Dr. M. D. Faust, Ada, returned from the New Orleans clinics the last of March.

Dr. L. C. White, Alva, was reported in a very serious condition in April from pneumonia.

Dr. and Mrs. J. M. Workman, Woodward, are taking a two months vacation in California.

Dr. W. B. Newell, Hunter, announecs his return from army service and relocation at his old home.

Drs. W. C. and Roy Pendergraft and W. G. Husband, Hollis, are establishing a hospital at Hollis.

Dr. T. L. Jeffress, Roff, has returned from New Orleans where he has been doing special work for a month.

Dr. W. B. Catto, El Reno, has returned from overseas service, received his discharge and will reopen offices in El Reno.

Bartlesville municipal authorities are planning the establishment of a bacteriological laboratory with a full time bacteriologist in charge.

Dr. M. C. Comer, Clinton, has completed a course of special work in Chicago eye, ear, nose and throat work and returned to his home.

Doctors S. H. Williamson and J. O. Wharton, Duncan; E. B. Thomasson, Velma, and J. A. Ivey, Marlow, are attending the New Orleans clinics.

Dr. W. B. Newlon, Tulsa, has been discharged from the army and has returned to his work. He will be associated with Drs. McCarty and Allison.

Nowata physicians have already begun action to establish a county hospital in conformity with an act of the last legislature permitting the voting of bonds for such purposes.

Dr. Jas. G. Harris, Muskogee, has been discharged from the army and has opened offices in the Flynn-Ames Building. He will devote himself to genito-urinary work exclusively.

Dr. C. C. Shaw, McAlester and Mill Creek, who prior to the war was physician to the State Penitentiary at McAlester, on being discharged from the army decided to locate in Poteau.

Dr. Benton Lovelady, Guthrie, after trying to better himself in the way of a location, investigating Missouri points, decided that there was no place like home and Guthrie was good enough for him.

Dr. A. E. Davenport, Major, M. C., U. S. A., Oklahoma City, after a prolonged absence in army cantonments in the United States and Foreign service in France, has been discharged from the army and is at home.

County Hospitals may be established according to a law passed by the last legislature which provided that any county might vote a bond issue for that purpose. The exact text of the law is not obtainable as we go to press.

Drs. J. A. Hatchett and T. M. Aderhold, El Reno, announce that hereafter management of the El Reno Sanitarium will pass into the charge of Dr. Aderhold and that Dr. Hatchett will continue his association with the institution.

Hospital Management, an extensive publication of Chicago devoted to technical and special consideration of hospital problems, contains a most commendatory article on Dr. Fred S. Clinton, Tulsa, Chairman of the State Committee on Hospitals. The article concludes that Dr. Clinton is a "Southwestern Live Wire".

Dr. J. Hutchings White, Muskogee, Captain, M. C., who is oscillating over France and Germany, writes the *Journal* an interesting letter, accompanied by one of the very original French papers circulated among our soldiers overseas. He assures us that he will soon return and never again leave his native heath and Muskogee.

The Physicians' and Surgeons' Adjusting Association, of Kansas City, wishes to call the attention of physicians in this field to the fact that they do collect old accounts. This Journal has accepted their advertisement, which will be found on another page of this issue, and any business transacted with this company will no doubt be entirely satisfactory to those who have dealings with them.

Mr. C. C. Childers, Enid, has been appointed Superintendent of the School for Feeble Minded Children, vice Dr. W. L. Kendall, who resigned some time ago. Mr. Childers was formerly connected with the institution and rendered efficient services. His appointment is a radical departure from rule and custom. Heretofore a physician has always been appointed to be superintendent of that and similar instutitions of the State. The *Journal* is inclined to the opinion that the onerous duties of management may well be placed in lay hands. While the administration of Dr. Kendall is above reproach and very likely cannot be equalled by any successor, it is generally agreed that the multifarious duties of management of such institutions and the treatment of the sick should not be placed in one person.

DISCHARGES FROM THE ARMY.

W. B. Catto, El Reno.
A. E. Davenport, Oklahoma City.
C. H. McBurney, Clinton.
W. M. Stout, Oklahoma City.
W. H. Kingman, Bartlesville.
J. T. Lowe, Blair.
W. P. Rudell, Altus.
L. S. Willour, McAlester,
M. E. Stout, Oklahoma City.
E. T. Robinson, Cleveland.
W. T. Rowley, Miami.
F. R. Sutton, Bartlesville.
Benj. H. Brown, Muskogee.
L. E. Pearson, Reed.
W. Albert Cook, Tulsa.

MISCELLANEOUS

PROPAGANDA FOR REFORM.

Misbranded Nostrums. The following nostrums were declared misbranded under the Federal Food and Drugs Act because of the false, fraudulent or misleading claims made for them: Alkavis; Sulferro-Sol; Gonorrhea and Gleet 3 Day Cure; Old Indian Fever Tonic; Pain-I-Cure; Walker's Dead Shot Colic Cure (*Jour. A. M. A.*, March 1, 1919. p. 670).

Saccharin—After the War. Having satisfied a need during the sugar shortage, the manufacturers of saccharin appear not to be content to turn their talents and plants to better uses, but suggest that the great commercial sacrifices made in setting their works into operation to produce saccharin should be rewarded by premission to continue the traffic under post-war conditions. The referee board to which the saccharin question was referred in this country has by no means given a clean bill of health to the chemical, and the people need to be protected from the danger, or at least the deception, of a substitute for sugar which is in no sense a true food. (*Jour. A. M. A.*, March 8, 1919, p. 729).

Organo Tablets and Orchis Extract. The Organo Product Co,. Chicago, sells Organo Tablets as a cure for "lost vitality." The Packers Product Co. sold Orchis Extract until it was put out of business by the government in 1918 by the issuance of a fraud order. Even a superficial comparison of the circular letters and booklets used in exploiting Organo Tablets shows a close connection between this humbug and the government declared fraud—Orchis Extract. Has Orchis Extract of the Packers Product Co. become Organo Tablets of the Organo Product Co? (*Jour. A. M. A.*, March 8, 1919, p. 746).

Depilagiene. The A. M. A. Chemical Laboratory reports that "Franco-American Hygienic Depilagiene", a hair remover, essentially is a mixture of barium sulphate, barium sulphid, sulphur and starch. The amount of barium sulphid was found to be 22.6 per cent.: this is equivalent to about 45 per cent. of commercial barium sulphid. Depilagiene has no claim to originality, as practically all chemical hair removers are composed of some form of sulphid. Naturally, the preparation is likely to cause more or less irritation of the skin. (*Jour. A. M. A.*, March 8. p. 746).

Validity of Provisions Concerning "Patent" Medicines. In the proceedings instituted by E. Fougera and Co., Inc., against the City of New York et al, the Court of Appeals of New York holds that the provision of the sanitary code is not unconstitutional in that it prescribed the formula disclosure of medicines. The purposes and effects of the code were well within the police power and had the object of protecting the public. "No man has a constitutional right to keep secret the composition of substances which he sells to the public as articles of food" (*State v. Aslesen*, 50 Minn. 5, 52 N. W. 220). If that is true of food, it is even more plainly true of drugs. But there was one objection to the ordinance, though one that amendment might correct: that the ordinance did not except existing stores of merchandise in the hands of dealers, in that the board of health exceeded the powers delegated to it. (*Jour. A. M. A.*, March 8, p. 753).

The Victory Over Rabies. Amid the victories on the European battlefield, we may pause to contemplate man's conquest of rabies. During the year 1916, 1,008 persons in the district of Lyons received the antirabic treatment. A single death in this list places the mortality at 0.099 per cent. Since 1900, more than 9,000 persons have received antirabic inoculations, with a total of nine deaths, or 0.09 per cent. (*Jour. A. M. A.*, March 15, 1919, p. 800).

Nature's Remedy Tablets. A. H. Clark, of the A. M. A. Chemical Laboratory, reports that "Nature's Remedy" is claimed to contain ten ingredients; that the manufacturers declare seven of these—burdock, juniper, sarsaparilla, mandrake, rhubarb, dandelion and prickly ash; and that the manufacturers state they are "more proud" of the other three, but refrain from naming them for fear of imitators. Clark's analysis, supplemented by a microscopic examination by E. N. Gathercoal at the University of Illinois School of Pharmacy, indicated that the unnamed drugs are aloes (or a preparation of aloes), cascara bark and belladonna root. The microscopist stated that rhubarb, as well as all the other named drugs, if present at all are there in such small quantities that no evidence of their presence was seen. As a result of the examination and a consideration of their powerful cathartic action, it is believed that Nature's Remedy is, essentially, aloes or aloin, cascara, and belladonna with, probably, resin of podophyllin (instead of mandrake)—a common cathartic mixture. (*Journal A. M. A.*, March 15, 1919, p. 815).

Misbranded Nostrums: A "Notice of Judgment" has been issued declaring the following nostrums misbranded: Chase's "Blood and Nerve Tablets," "Liver Tablets," and "Kidney Tablets," XXX Tonic Pills; Egiuterro; Uicure; Sweet Rest for Children; Beaver Drops Comp.; Blood Kleen; Heart and Nerve Regulator; Kidneyleine; Eye Powder; Tanrue Herbs and Pills, and 5 Herbs. (*Jour. A. M. A.*, March 22, 1919, p. 883).

Havens' Wonderful Discovery. The Council on Pharmacy and Chemistry reports that E. C. Havens, Sioux Falls, S. D., requested consideration of a remedy which he claims to have discovered for the cure of influenza. According to the label on a specimen, "This remedy is good for Coughs, Colds, Lung Diseases, LaGrippe, Influenza, Rheumatism; good for Pains, Cramps, Backache, Lumbago, Neuralgia; for severe pains soak your feet in hot water for 3 nights, add 3 tablespoons of baking soda in water and apply Anti-Flue Medicine to the affected parts." The "discovery" was stated

to contain oil of wintergreen, oil of sassafras, oil of black pepper, spirit of camphor, spirit of turpentine, spirit of chloroform, tincture of arnica and alcohol, and was called Havens' Rheumatic Remedy before its supposed effect on "flue" was "discovered". The Council finds that Havens' Wonderful Discovery is an unscientific, irrational mixture, marketed under therapeutic claims which are unwarranted and without foundation. (*Jour. A. M. A.*, March 22, 1919, p. 883).

NEW BOOKS

Under this heading books received by the Journal will be acknowledged. Publishers are advised that this shall constitute return for such publications as they may submit. Obviously all publications sent us cannot be given space for review, but from time to time books received, of possible interest to Oklahoma physicians, will be reviewed.

GYNECOLOGY. By William P. Graves, M. D., Professor of Gynecology at Harvard Medical School. Second Edition, Thoroughly Revised. Octavo volume of 883 pages with 490 original illustrations, 100 of them in colors. Philadelphia and London: W. B. Saunders Company. 1918. Cloth, $7.75 net.

A TEXT BOOK OF PHYSIOLOGY: FOR MEDICAL STUDENTS AND PHYSICIANS. By William H. Howell, Ph. D., M. D., Professor of Physiology, Johns Hopkins University, Baltimore. Seventh Edition Thoroughly Revised. Octavo of 1059 pages, 307 illustrations. Philadelphia and London: W. B. Saunders Company, 1918. Cloth, $5.00 net.

CLINICAL MICROSCOPY AND CHEMISTRY. By F. A. McJunkin, M. D., Professor of Pathology in the Marquette University School of Medicine; formerly an Assistant in the Pathological Laboratory of the Boston City Hospital. Octavo volume of 470 pages with 131 illustrations. Philadelphia and London: W. B. Saunders Company, 1919. Cloth $3.50.

SURGICAL TREATMENT. A Practical Treatise on the Therapy of Surgical Diseases for the Use of Practitioners and Students of Surgery. By James Peter Warbasse, M. D., Formerly Attending Surgeon to the Methodist Episcopal Hospital, Brooklyn, New York. In three large octavo volumes, and separate Desk Index Volume. Volume III contains 861 pages with 864 illustrations. Philadelphia and London: W. B. Saunders Company. 1919. Per set (Three Volumes and the Index Volume): Cloth $30.00 per set.

NEOPLASTIC DISEASES. A text-book on Tumors. By James Ewing, M. D., Sc. D., Professor of Pathology at Cornell University Medical College, New York City. Octavo of 1027 pages with 479 illustrations. Philadelphia and London: W. B. Saunders Company, 1919. Cloth $10.00 net.

PATHOLOGICAL TECHNIQUE. A practical Manual for workers in Pathologic Histology and Bacteriology. Including Directions for Clinical Diagnosis by Laboratory Methods. By F. B. Mallory, M. D., Associate Professor of Pathology, Harvard Medical School; and J. B. Wright, M. D., Pathologist to the Massachusetts General Hospital. Seventh edition, revised and enlarged. Octavo of 555 pages with 181 illustrations. Philadelphia and London: W. B. Saunders Company, 1918. Cloth $3.75.

PRINCIPLES AND PRACTICE OF OBSTETRICS. By Joseph B. DeLee, A. M., M. D., Professor of Obstetrics at the Northwestern University Medical School. Third edition, thoroughly revised. Large octavo of 1089 pages, with 949 illustrations, 187 of them in colors. Philadelphia and London: W. B. Saunders Company, 1918. Cloth, $8.50 net.

THE ORTHOPEDIC TREATMENT OF GUNSHOT INJURIES. By Leo Mayer, M. D., Instructor in Orthopedic Surgery, New York Post Graduate Medical School and Hospital, with an introduction by Col. E. G. Brackett, M. C., N. A. Director of Military Orthopedic Surgery. 12mo of 250 pages, with 184 illustrations. Philadelphia and London: W. B. Saunders Company, 1918. Cloth $2.50 net.

SURGICAL TREATMENT.

Volume II.

Surgical Treatment. A Practical Treatise on the Therapy of Surgical Diseases for the use of Practitioners and Students of Surgery. By James Peter Warbasse, M. D., Formrely Attending Surgeon to the Methodist Episcopal Hospital, Brooklyn, New York. In three large octavo volumes, and separate Desk Index Volume. Volume II contains 829 pages with 761 illustrations. Philadelphia and London: W. B. Saunders Company. 1918. Per set (Three Volumes and the Index Volume): Cloth $30.00 per set.

This second volume of Surgical Treatment follows the high and correct ideals set by its predecessor. The reader is struck with admiration at the great care shown in handling the remoter and often slighted surgical subjects, those not often coming to the surgeons' notice, but when they do come resolve themselves into measures of prime importance. This issue contains treatments of injuries and diseases of the scalp, skull, eye, nose, nasopharynx and fauces, larynx and trachea, mouth, ear, spine, neck, salivary glands, thyroid; the throat, breast, abdomen, intestines, stomach and spleen.

PROGRAMME

TWENTY-SEVENTH ANNUAL MEETING, OKLAHOMA STATE MEDICAL ASSOCIATION, MUSKOGEE, MAY 20-21-22, 1919.

(Subject to additions and modification.)

GENERAL INFORMATION.

MEETING PLACE: All meetings, unless otherwise announced, will be held in the Old Court House Building, Second and Court.

REGISTRATION: Every person attending any meeting or section, except those announced to be open to the public, is expected to register name, home and local address and telephone number, in order that they may be reached in emergency.

A roster of 1919 members made up from membership stubs will be found at the registration desk. Registrants on the list will be registered and provided badges and programs. Guests from other states will be provided registration and badges on application to the Secretary. Oklahoma physicians not members who wish to attend the meetings will apply to the Secretary who will arrange for their attendance and the courtesies of the meeting.

DELEGATES: Should leave their credentials with a member of the Credentials Committee who will be at the registration desk, after they have registered. Confusion and unnecessary duplication will be avoided by **not leaving credentials** with the Secretary.

YOUR PAPER: Papers on the program of this meeting **are the property** of this Association. No person should carry them home for any purpose. They should be carefully prepared in duplicate in the exact form the author wishes them to appear in the Journal. We suggest the following general arrangement of papers which, if followed, will save every one concerned much trouble.

First. Subject of paper.

Second. Name and address of author.

Third. The paper should be **double spaced, typewritten,** carefully punctuated. Authors are advised that proof will be sent them before the paper is published; with the proof quotations of prices of reprints will be furnished. If the article is to be illustrated, clear photographs or drawings must be furnished or suitable plates. It is requested that cuts, pictures or drawings be originals and strictly applicable to text of article unless it is obviously necessary to use others in order to properly illustrate the article.

Fourth. Papers should **postively** be left with either the reporter or Chairman of the Section when read or with the Secretary. If you carry them home you will cause unnecessary inconvenience and useless correspondence. Often such papers are not available for publication in the issue of the Journal to which they are best adapted, and discussion of them is lost.

HAND PROGRAMS: Will be furnished attendants at the meeting only. They will not be mailed to the membership as the following pages give a sufficient idea of the program.

SECTIONS: Will convene promptly at the time designated and will be continued until program is completed. Authors not present when their number is called, unless exceptional circumstances prevail, will have their papers placed at the bottom of the list to take their turn in rotation.

TUESDAY, MAY 20, 1919.

11:00 A. M. **Meeting of the Council.**

Matters pertaining to business of any character should be prepared in advance and submitted to this body. The House of Delegates should not have its time unnecessarily encroached upon by presentation of trivial matters. The Council is the business agent of the Association and first passes on matters of business. Appeals from constitutent societies or greviences of individual members should be presented to the Council.

2:00 P. M. **Meeting of the House of Delegates.**

4:00 P. M. **Meeting of Oklahoma Military Medical Men.**

8:00 P. M. **General meeting:**

Call to order by the President, Dr. L. S. Willour, McAlester.

Address of Welcome, Honorable N. A. Gibson, Muskogee.

Response on behalf of the Association, Major Hugh L. Scott, Holdenville.

President's Address, Dr. L. S. Willour, McAlester.

SECTION ON SURGERY AND GYNECOLOGY.

Dr. A. A. Will, Oklahoma City, Chairman.

WEDNESDAY, MAY 21, 9:00 A. M.

Chairman's Address.

1. Symposium on Pneumonia.
   (a) "Complications"—Dr. W. W. Rucks, Oklahoma City.
   Discussion opened by Dr. A. W. White, Oklahoma City.
   (b) "Surgical Complications With Special Reference to Empyema"—Dr. A. L. Blesh, Oklahoma City.
   Discussion—Captain F. M. Sanger, Oklahoma City.
   (c) "Etiology and Pathology"—Dr. L. A. Turley, Norman.
2. "Malignant Diseases of the Large Intestine"—Dr. LeRoy Long, Oklahoma City.
   Discussion opened by Dr. John Riley, Oklahoma City.
3. "The Use of Dakin Solution in Surgery"—Dr. M. Smith, Oklahoma City.
4. "Ovarian Function"—Dr. J. S. Hartford, Oklahoma City.
5. "Congenital Hypertrophic Stenosis of the Pylorus—Differential Diagnosis and Treatment"—Dr. G. A. Wall, Tulsa.
   Discussion—Dr. O. A. Flanagan, Tulsa.
6. "Gall-Bladder Infection"—Dr. McLain Rogers, Clinton.
7. "Exophthalmic Goitre"—Dr. W. H. Livermore, Chickasha.
8. "Treatment of Open Wounds in the War Zone"—Dr. W. M. Stout, Oklahoma City.
9. "Infection of Gall-Bladder—Etiology—Treatment"—Captain F. M. Sanger, Oklahoma City.
   Discussion—Dr. M. E. Stout, Oklahoma City.
10. "Blood Transfusion—Selection of Donors—Description of Technique"—Drs. F. L. Carson and R. M. Anderson, Shawnee.
11. "Important Procedure in Abdominal Surgery"—Dr. J. Clay Williams, Miami.

SECTION ON EYE, EAR, NOSE AND THROAT

Dr. R. O. Early, Ardmore, Chairman.

WEDNESDAY, MAY 21, 2:00 P. M.

Chairman's Address.

1. "Surgery of the Tonsil"—Dr. H. Coulter Todd, Oklahoma City.
2. "The Ear in the Recent Epidemic of Influenza"—Dr. L. C. Kuyrkendall, McAlester.
3. "Enucleation of the Eye Versus Mule's Operation"—Dr. J. D. Kiser, Bartlesville.
   Discussion opened by Dr. C. M. Fullenwider, Muskogee.
4. "Focal Infection from the Teeth"—Dr. J. H. Barnes, Enid.
5. "Causative Factors in Eye Conditions"—Dr. S. C. Davis, Oklahoma City.
6. "The Acute Infections of the Upper Respiratory Tract"—Dr. A. L. Guthrie, Oklahoma City.
7. A Paper, Subject not announced—Dr. M. K. Thompson, Muskogee.
8. "Acute Glaucoma, Report of Case—Recovery Without Operation"—Dr. J. R. Phelan, Oklahoma City.
   Discussion opened by Dr. J. H. Barnes, Enid.

SECTION ON PEDIATRICS AND OBSTETRICS.

Dr. O. A. Flanagan, Vice-Chairman, Tulsa.

WEDNESDAY, MAY 21, 2:00 P. M.

Chairman's Address.

1. "Internal Gland Diseases of Children"—Dr. Winnie M. Sanger, Oklahoma City.
   Discussion opened by Dr. A. C. Hirschfield. Oklahoma City.
2. "Presentation of Case Histories in Children's Diseases"—Dr. J. Raymond Burdick, Tulsa.
3. "Mentality Measurements"—Dr. Bertha Margolin, Tulsa.
4. "Acute Miliary Tuberculosis Following Puerperal Infection"—Dr. M. H. Newman, Oklahoma City.
   Discussion opened by Dr. A. J. Sands, Oklahoma City.
5. "Pituitary Extract in Obstetrics"—Dr. C. Doler, Bokoshe,
   Discussion—Dr. W. W. Beesley, Tulsa.

SECTION ON GENITO-URINARY DISEASES, RADIOLOGY AND DERMATOLOGY.

Dr. J. H. Hays, Enid, Chairman.

WEDNESDAY, MAY, 21, 9:00 A. M.

Chairman's Address—"Some Studies in Pyelography".

1. "Venereal Control and Treatment in the U. S. Army"—Lieut-Col. Hugh Scott, Holdenville.
2. "Anent the Anti-Vice Crusade"—Dr. W. B. Pigg, Okmulgee.
   Discussion opened by Dr. F. K. Camp, Oklahoma City.
3. "A Paper"—Lieut. M. H. Foster, Alderson.
4. "Sporotrichosis"—Dr. E. S. Lain, Oklahoma City.
5. "Importance of a Thorough Urological Examination in All Cases of Obscure Abdominal Pain and in All Bladder and Kidney Infection"—Capt. J. H. Sanford, Muskogee.
6. "Operative and Diagnostic Cystoscopy" (Illustrated with lantern slides)—Dr. Bransford Lewis, St. Louis, Mo.
   Discussion opened by Dr. Jos. T. Martin, Oklahoma City.
7. "Gonorrhoea in the Female"—Dr. C. P. Linn, Tulsa.
8. "A Paper"—Dr. Rex Bolend, Oklahoma City.
9. "Some Obstructions at the Outlet of the Stomach" (Demonstrated Radiographically)—Dr. E. N. McKee, Enid.
10. "A Paper"—Dr. J. C. Mahr, State Health Department, Oklahoma City.
11. "The Relation of Focal Infections to Skin Diseases"—Dr. Chas. H. Ball, Tulsa.
12. "Chronic Urethritis"—Dr. T. B. Coulter, Tulsa.
    Election of officers for the Section

SYMPOSIUM ON SYPHILIS.

13. "Initial Lesion of Syphilis"—Dr. J. F. Gorrell, Tulsa.
14. "Skin Manifestations of Syphilis"—Dr. Curtis R. Day, Oklahoma City.
15. "Syphilis as We Find It, With Report of Fifty Cases"—Dr. R. A. Douglas, Tulsa.
16. "Syphilis and Mental Psychosis"—Dr. D. W. Griffin, Norman.
    Discussion—Dr. A. D. Young, Oklahoma City.
17. "Syphilis of the Gastro-Intestinal Tract"—Dr. Jos. T. Martin, Oklahoma City.
18. "Syphilis of the Eye"—Dr. A. S. Piper, Enid.
19. "The Fundamental Principles of the Wassermann Test"—Dr. A. J. Hinkleman, Oklahoma City.
20. "The Curability of Syphilis"—Drs. E. H. Martin and E. A. Purdum, Hot Springs, Ark.
    Discussion opened by Dr. Bransford Lewis, St. Louis, Mo., and Dr. L. S. Willour, McAlester.
21. "The Treatment of Syphilis"—Dr. J. W. Rogers, Tulsa.
    Discussion opened by Dr. W. J. Wallace, Oklahoma City.
22. "The New Treatment of Syphilis in the Various Stages"—Dr. W. J. Wallace, Oklahoma City

SECTION ON GENERAL MEDICINE, NERVOUS AND MENTAL DISEASES.

F. W. Ewing, M. D., Chairman, Muskogee.

WEDNESAY, MAY 21, 9:00 A. M.

Chairman's Address.

1. "Diagnosis of Pyelitis"—Dr. J. A. Hatchett, El Reno.
   Discussion opened by Dr. W. J. Wallace, Oklahoma City.
2. "Prevention of Influenza and Allied Diseases"—Dr. W. F. Dutton, Tulsa.
3. "Some of the Sequellae of Epidemic Influenza"—Dr. A. B. Leeds, Chickasha.
4. "Applications of Practical Methods in Health Conservation"—Dr. J. T. Nichols, Muskogee.
   Discussion—Dr. F. E. Warterfield, Muskogee.
5. "Insanity by Contagion"—Dr. John W. Duke, Guthrie.
6. "Nocturnal Enuresis"—Dr. W. A. Tolleson, Eufaula.
7. "Cardiac Arrhythmia"—Dr. Lea A. Riely, Oklahoma City.

8. "The Value of the Consultant in Medicine to the General Practitioner"—Dr. C. J. Fishman, Oklahoma City
   Discussion opened by Dr. J. A. Hatchett, El Reno.
9. "The Tuberculosis Dispensary"—Dr. H. T. Price, Tulsa.
10. "Diagnosis of the Pathological Heart"—Dr. Benj. H. Brown, Muskogee.
11. "Remittent Malarial Fever"—Dr. J. A. Haynie, Durant.
    Discussion opened by Dr. J. S. Fulton, Atoka.
12. "Concurrent Typhoid and Malarial Infection"—Dr. Sessler Hoss, Muskogee.
13. "Demonstration of the Value of Moving Pictures and Animated Diagrams in the Study of Percussion and Auscultation as Applied to the Diagnosis of Pulmonary Tuberculosis"—Colonel Wm. O. Owen, M. C., U. S. A., Washington, D. C., and Dr. John C. Breedlove, Muldrow, Oklahoma.
14. "The Prevention of Eclampsia"—Dr. David Armstrong, Durant.
15. Paper, —Dr. F. K. Camp, Oklahoma City.
16. "Anthrax", with Report of a Case—Dr. W. R. Joblin, Porter.

COUNCILOR DISTRICTS.

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District No. 7. Pawnee, Osage, Washington, Tulsa, Creek, Nowata and Rogers. N. W. Mayginnis, Tulsa.

District No. 8. Craig, Ottawa, Delaware, Mayes, Wagoner, Cherokee, Adair, Okmulgee, Muskogee and McIntosh. J. H. White, Muskogee.

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Reciprocity with Georgia, Kentucky, Mississippi, Nevada, North Carolina, Wisconsin, Kansas, Arkansas, Virginia, West Virginia, Nebraska, New Mexico, Tennessee, Iowa, Ohio, California, Colorado, Indiana, Missouri, New Jersey, Vermont, Texas, Michigan.

Meetings held second Tuesday of January, April, July and October, Oklahoma City.

Address all communications to the Secretary, Dr. J. J. Williams, Weatherford.

DR. L. J. MOORMAN

OKLAHOMA CITY, OKLAHOMA

PRESIDENT OKLAHOMA STATE MEDICAL ASSOCIATION, 1919-1920.

Dr. Moorman is a native of Leitchfield, Kentucky. He took his B. S. degree at Georgetown College in 1898, and M. D. at University of Louisville in 1901. He practiced medicine at Jet, Oklahoma, from 1901 to 1905, and at Nashville, Oklahoma, from 1905 to 1906, locating in Oklahoma City in in 1907.